

CHAPTER 3

SUMMARY SUBBASIN FINDINGS AND RECOMMENDATIONS

This chapter summarizes findings and general recommendations for the entire assessment area according to each resource category. The resource categories are: social and economic, hydrology and watersheds, aquatic habitat and species, landscape ecology, fire, wildlife, roads, recreation, wilderness and trails, and cultural and heritage resources. Following these findings and recommendations is a comparison of Interior Columbia River Basin broad scale findings to the Selway and Middle Fork Clearwater subbasins findings. This chapter concludes with information regarding data gaps, additional analysis needs and priorities, and partnership opportunities within the assessment area.

SUBBASIN FINDINGS AND RECOMMENDATIONS

SOCIAL AND ECONOMIC

SUBBASIN SOCIAL AND ECONOMIC FINDINGS

The Selway and Middle Fork Clearwater subbasins lie within Idaho County, the largest and nineteenth most populous of 44 counties in the state. Since the late 1800s, natural resources have driven the economy and shaped the character of the incorporated communities of Kooskia, Elk City, Grangeville, and other small towns located just outside the southern and western boundaries of the assessment area. To the east, in Ravalli County, Montana, the towns of Hamilton and Darby, as well as other small communities, are gateways to the subbasin. The unincorporated communities of Lowell and Syringa, Idaho, lie directly within the assessment area. Dynamic market forces that influenced boom and bust cycles among periods of apparent stability have perpetuated fluctuations in the socioeconomic status of these communities.

The present circumstances may be a transition to a changed, more stable economic state. The indicators are: trends in demographic composition, workforce status, alteration in the forestry sectors of the economy, economic diversification, and land use. While manufacturing related to timber is still important, the economic base of the communities is gradually changing from agriculture and timber based industries to services and retail sales often associated with recreation and tourism. Federal and state government operations and employment remain important factors in the area's economy, although commodity production on federal lands has diminished. Based on those factors, Idaho County has a moderate economic resiliency but low socioeconomic rating (Quigley et al, 1996). These ratings were established by considering geographic isolation, specialization in industry groups, and associations with the Forest Service or Bureau of Land Management. This analysis does not account for recreation or other economic activity due to lack of sources of employment data. In examining community-level changes in resiliency, "... those communities that have been confronted with and survived challenges --- such as sawmill closures --- are among the most resilient because they have successfully learned how to deal with change . . . Adversity . . . often provides incentive for social interaction and cooperation, catalyzing organization and forward-directed actions" (Quigley et al., 1996).

The demographics of communities change as people move into the area from out-of-state. The population growth in Idaho County was 9.2 percent from 1990 to 1999 (U. S. Census Bureau,

1997). The aesthetics, the lure of the natural state of relatively untouched wildlands, outdoor recreation, low crime rates, pace of life, and sparse populations, not economics, attract newcomers. The traditional associations among the long-time residents involved with logging, ranching and farming are diminishing. Many immigrants are retirees and individuals who seek summer homes, especially along the wild and scenic river corridors. Few invest in community or social capital. Most live in their homes a few months out of the year.

An ethnographic study of the assessment area summarizes 60 community opinion leaders' concerns about the present and future and their perceptions of agency management and resource issues. Concerns about wilderness issues were most frequently mentioned. Access and the spread of noxious weeds were primary interests.

Management issues of concern included: effects of rotation of Forest Service personnel, community involvement, mistrust, outside influences to management that "tied the hands of managers," and effective planning and use of financial resources.

SUBBASIN SOCIAL AND ECONOMIC RECOMMENDATIONS

The socio-economic component of the ecosystem management strategy is designed to support the economic and social needs of people, cultures, and communities of the assessment area. The social and economic needs of people and communities in the Selway and Middle Fork Clearwater subbasins can, to some extent, be supported or influenced by agency management. Other influences such as market factors, natural events, and changes in legislative policy direction are outside agency control. Also, communities within the assessment area are unique; each has its own identity. The ability of each community to be resilient or adapt to change, will come from the community itself and the external assistance its citizens want or need.

While agency management makes a conscious effort to accomplish the following, public response to management issues indicates that efforts could be more effective. The following recommendations respond to citizens' economic needs, and to perceptions or concerns about management and resource issues.

Support local economic activity in providing goods and services; help communities move toward economic diversification.

The Forest Service should encourage local work force participation on forestlands that support traditional occupations, cultures, and a sense of involvement. Stewardship contracting is a high priority, especially in less economically diverse areas. To help sustain communities during transitions from economically specialized to more diversified economies, offer contracts for sales and services to local firms and individuals. Promote and support economic diversification. Become informed of the goals and visions of local community development planners and participants and be prepared to coordinate and cooperate on their terms.

Determine and utilize more effective methods for public involvement.

Some individuals are disgruntled with past and current public involvement processes. To improve public involvement, fair and cordial treatment is important. Knowledge of methods of effectively facilitating public meetings is necessary. Use a fresh approach to community involvement. Instead of large meetings including polarized interest groups, involve key individuals and target small groups with common interests. Combine the knowledge of agency personnel with the knowledge of public opinion leaders.

More effectively communicate the activities and purpose of Forest Service management strategies.

More use of local media, newspapers, radio, and newsletters to communicate Forest Service efforts and operations would contribute to understanding.

Inclusion of community resources in planning and implementation of agency policy would facilitate understanding and cooperation.

More one-on-one, personal level communication among agency employees and local citizens would promote trust. Facilitate Forest Service employee inclusion in community activities.

Integrate the needs of local communities more thoroughly into agency decision-making and management activities.

Create working advisory committees in the spirit of stewardship projects and wilderness planning groups (LAC task group). Minimize the time and cost of planning, be efficient and effective. Create a more predictable operating environment.

To establish trust and to encourage Forest Service involvement in community activities, minimize costs of planning and be more predictable. Facilitate FS employee involvement in community activities.

Coordination with state, county, and tribal governments is important to avoid duplication of research, planning and implementation. Share information.

Understand tribal issues (Appendix N) in the context of economic and cultural effects. Cooperate with and collaborate with the Nez Perce Tribal Government on social and ecosystem management issues.

Demonstrate that concerns and information offered by opinion leaders are given due consideration.

Using the information presented above and in Appendix N (discussions with opinion leaders who represent interest groups) be aware of how social factors affect responses to management issues.

Identify possible changes to land and resources management plans to incorporate concerns of stakeholders.

AIR QUALITY

SUBBASIN AIR QUALITY FINDINGS

Air quality in the assessment area is good. The Selway-Bitterroot Wilderness in the Selway sub-basin is a class I airshed and receives the highest level of air quality protection. The downwind areas of impact experience infrequent effects from wildland fires and planned prescribed fires. Working to improve ecosystem function by increasing the use of fire processes is likely to increase conflicts with protecting air quality. The challenge will be to maximize the benefits of fire use while still protecting air quality. The following are air quality findings:

- Wildland fires are considered natural events and are covered under EPA's Natural Events Policy, exempting smoke from wildland fires from meeting national ambient air quality standards (NAAQS).
- Prescribed fire smoke from planned events is subject to the rules of the Clean Air Act and NAAQS.
- There are no non-attainment areas within 10 miles of the subbasins; but the Missoula non-attainment area in Montana is downwind from the subbasins and it has been affected by wildfire and prescribed fire smoke in the past.
- The Montana/North Idaho Airshed Group has the authority and resources to monitor and manage for the protection of the air resources.

SUBBASIN AIR QUALITY RECOMMENDATIONS

The Forest Service, specifically the national forests of northern Idaho, should continue to participate in the Montana/North Idaho Airshed Group.

- The Nez Perce National Forest should continue to apply the mitigation and control measures specified by the Montana/North Idaho Airshed Group.

- Continue implementing the Air Resource Monitoring Plan established for the Selway-Bitterroot Wilderness, including doing phase III lake sampling and using automatic camera system data collected from Sula Peak.

HYDROLOGY AND WATERSHED

SUBBASIN HYDROLOGY AND WATERSHED FINDINGS

Hydrologic Regimes

Hydrologic runoff regimes in the Selway and Middle Fork Clearwater subbasins show three distinct patterns when recorded on hydrographs. Streams affected by winter rainstorms or rain-on-snow events show winter flood peaks as well as snow runoff peaks within the same water year. Streams dominated by high elevation snowmelt runoff in spring show only one peak between April and June. Low to mid elevation watersheds that flow into the lower Middle Fork Clearwater River have a mixed streamflow regime and can show peaks from winter storms, spring and summer rains, and spring snowmelt occurring from December to July.

The Effect on Water Yield from Disturbance Processes

Water yield patterns in the higher elevation watersheds in the headwaters of the Selway subbasin are strongly dominated by spring snowmelt runoff regimes. The disturbance process that historically affected water yield was wildfire. Water yield increased after wildfire and was an important process in channel formation and woody debris recruitment. Fire suppression has decreased the effect of fire as stands continue to recover. Increases in water yield due to fire are absent in some watersheds.

Watersheds in the middle and lower Selway subbasin are strongly dominated by spring snowmelt runoff regimes. The disturbance process that historically has had the most effect on water yield is wildfire, in combination with winter storm or rain-on-snow floods. Debris torrents after large fires provided debris and large wood to channels. Fire suppression has caused a departure from large fires, which removed vegetation in large areas of watersheds. Due to this, there has been a departure from the historical processes that affect channel formation and also provide debris and wood to channels that provide diversity for fish habitat.

Within the Middle Fork Clearwater River, O'Hara and Goddard Creeks, and Clear Creek ERUs, and some watersheds in the North Selway Face ERU, fire suppression and human management activities have resulted in a departure from natural water yield processes. These watersheds have lost the influence on water yield and streamflow regimes related to large-scale fire disturbance. Natural disturbances such as wildfire are pulse disturbances. Timber harvest, road construction, subdivisions, and recreational developments introduced press disturbances. Frequent entries for timber harvest have caused frequent, small increases in water yield creating a chronic disturbance, which is a departure from historical processes. Historically the disturbance was rapid with recovery following.

The Effect on Sediment From Disturbance Processes

Historical sediment patterns in watersheds were highly dependent on natural fire regimes. The frequency of the sediment peak and pattern of the peaks varies within watersheds in the subbasin. Watersheds with a large proportion of their area at high elevation have sediment peaks that are smaller than watersheds in the middle and lower Selway subbasin. The sediment peaks were often two or three times as high as in the lower Selway and Middle Fork Subbasin. This is probably due to a longer fire season, lower elevation area in the watershed, and longer snow-free season.

Historically sediment patterns were dependant on pulse disturbances such as wildfire and floods, or wildfires followed by floods. This is considered a pulse disturbance and is part of the natural sediment regimes. Fire suppression changed the pattern of sediment peaks within the past 60

years, decreasing sediment peaks within watersheds that are near natural conditions as in designated wilderness, Meadow Creek ERU, and most of the North Selway Face ERU.

Historical sediment patterns within the O'Hara and Goddard Creeks, Clear Creek, and Middle Fork Clearwater River ERUs were similar to the unmanaged watersheds until around 1935 when fire suppression began. Another departure from historical patterns in these ERUs is the change from fire and floods as pulse disturbances to wide-scale press disturbances associated with road construction, timber harvest, recreational developments, and human settlement.

Stream channels evolved with sediment regimes that are a result of the large pulse disturbances. Decrease in the pulse events slows down recruitment, storage and movement of sediment and wood through the river system.

Watershed, Streamside, and Riparian Conditions

Within the wilderness, roadless and unmanaged watersheds in the Selway subbasin, watershed conditions, water quality, and streamside riparian conditions are considered to be near natural. Fire suppression has affected some of the natural channel forming processes, but how much it has affected these processes is unknown.

High road densities, multiple stream crossings, recreational and residential development, and timber harvest have had a moderate to high effect on watershed conditions in the O'Hara and Goddard Creeks, Middle Fork Clearwater River, Clear Creek, and North Selway Face ERUs.

Encroachment of human activities on riparian areas in the Selway and Middle Fork Clearwater subbasins has moderately affected several watersheds. These include lower Clear Creek, Leitch Creek, lower O'Hara Creek, Deep Creek, portions of the upper Selway River, Swiftwater Creek, Maggie Creek, Smith Creek, Suttler Creek, and other small watersheds in the Selway and Middle Fork Clearwater subbasins.

Water temperatures have increased above historical conditions due to a decrease in riparian vegetation along streams and road encroachment. Stream temperature data on Clear Creek and lower O'Hara Creek show increases in stream temperature over time.

Soil Productivity and Soil Erosion

Soil productivity has decreased below historical levels due to surface soil disturbance, soil surface heating, soil surface erosion, and soil compaction related to press disturbances such as timber harvest, skid trails, landing construction, dozer piling of slash, high severity prescribed fire, and road building. This has occurred mostly in the Middle Fork Clearwater, O'Hara and Goddard Creeks, and Clear Creek ERUs. Widespread OHV use has also resulted in soil compaction, multiple trail formation, and soil disturbance in the lower Selway and Middle Fork Clearwater watersheds. Soil compaction and loss of vegetation is occurring around high lakes and in meadows due to heavy use in the wilderness and in the Meadow Creek area.

Large wood has decreased from historical levels in timber harvest units where large wood was piled and burned after timber harvest, or prescribed burns where high severity fire burned large wood. This has decreased woody debris available for soil nutrients, and removed soil duff and humus, which store the plants' available nitrogen source.

SUBBASIN HYDROLOGY AND WATERSHED RECOMMENDATIONS

Recommendations for the subbasins are the following:

- Restore natural sediment and water yield regimes at the subbasin and fifth code HUC (hydrologic unit code) level.
- Restore and conserve stream zone and riparian areas.
- Restore long-term soil productivity and reduce accelerated erosion related human activities.

Restore Natural Sediment and Water Yield Regimes

Restoration actions aimed to restore natural sediment and water yield regimes at the subbasin level include restoration of large natural disturbances such as fire. Increasing the use of wildland fire for resource benefit in wilderness and roadless areas is a very high priority. Another very high priority is to increase the use of natural and prescribed fire in the developed areas of the subbasins where possible. Restoration actions that are a very high priority on a fifth code HUC scale are: reduction of frequent entries into watersheds for timber harvest and road building, in order to reduce chronic sediment levels and frequent water yield increases; planning harvest and road activities to reduce the chronic sediment deposition in streams; and timing harvest entries to conserve and restore natural streamflow regimes.

Restore and Conserve Stream Zone and Riparian Areas

Very high priority actions associated with restoring and conserving stream zone and riparian areas at the subbasin level include restoration of natural fire regimes and natural erosion processes such as debris torrents that provide woody debris to stream systems and are a large component of stream channel formation. Road encroachment has impaired riparian function at the fifth code HUC level. A high priority in watersheds where roads encroach on stream zones is to investigate relocating roads out of stream zones, decommissioning roads in riparian zones, and developing sediment reduction and revegetation plans where roads remain in stream zones. A high priority in the Middle Fork Clearwater River, Clear Creek, and the O'Hara and Goddard Creeks ERUs is to use the ecosystem analysis at the watershed scale (EAWS) process to prioritize road-decommissioning opportunities when roads are no longer needed for the transportation system. This process should be done in partnership with the Clearwater National Forest in the Middle Fork Clearwater ERU. Continuing the Horse Creek paired watershed study and road obliteration study is a high priority.

Restore Long-Term Soil Productivity and Reduce Accelerated Erosion Related to Human Activities

High priority actions to restore long-term soil productivity and reduce accelerated erosion related to human activities would include restoration of soil productivity where timber harvest with ground-based equipment has increased soil compaction and disturbance. Another high priority for soil restoration is to obliterate and restore abandoned trails, illegal salt licks, dispersed and unauthorized OHV trails, and abandoned outfitter camps. A moderate priority for soil restoration is to increase the amount of large woody debris that is left on harvest units and prescribed burns. Where landslide risk occurs, map and delineate high-risk areas during project planning (this is a high priority).

AQUATIC HABITAT

SUBBASIN AQUATIC HABITAT FINDINGS

STREAMS

The Selway and Middle Fork Clearwater subbasins provide a significant amount of habitat with high or very high habitat potential to support aquatic species. The largely wilderness and roadless character of the Selway subbasin results in a diversity of high-quality, well-connected habitat. The Selway subbasin in particular is considered a stronghold watershed in the context of the upper Columbia River basin.

The greatest changes in habitat condition have occurred in tributaries to the lower reaches of the Selway River and throughout the Middle Fork Clearwater subbasin, including its largest watershed, Clear Creek. Habitat changes are generally the result of human-caused press disturbances on the landscape, and include increased sediment deposition, higher stream temperatures, lack of large woody debris recruitment, loss of pools, and overall simplification of habitat. In addition, fire suppression has undoubtedly resulted in a reduction in fire frequency, thus changing the historic sediment, large wood, water flow, and temperature regimes in both

AQUATIC SPECIES

roaded and roadless watersheds. Changes in these regimes may have resulted in changes to pool-forming processes and stream productivity, even in areas where obvious changes in landscape condition are not evident.

Local changes in stream habitat and riparian condition are present throughout both subbasins. Domestic livestock, pack stock grazing, and high concentrations of wild ungulates have resulted in wider channels and bank instability in some reaches, but these changes have not occurred at a landscape level.

MOUNTAIN LAKES

The existing physical characteristics of mountain lakes remain similar to the historic condition. Due to natural succession, there may be fewer lakes now than historically. High human use at some lakes may have resulted in local changes in soil compaction, riparian plant communities, streamside and lakeside morphology, and the appearance of naturalness. In many areas, high visitor use is correlated with the establishment of stocked, non-native fish in mountain lakes. Landscape scale changes in lake morphology, however, have probably not occurred in the past 200 years.

Of the 347 mountain lakes in the Selway subbasin, 239 (69 percent) have been surveyed. Of these 239 lakes, 136 (57 percent) have been stocked within the past 50 years. Currently, 98 (40 percent) historically fishless lakes now support fish; 142 (60 percent) remain fishless. Presumably, the existing biological characteristics of fishless lakes are similar to the historic condition.

Establishment of introduced brook trout populations in mountain lakes is correlated with reduced abundance or absence of specific aquatic organisms and a reduction in overall aquatic species diversity, when compared to lakes where introduced fish are not present. For example, long-toed salamanders rarely occur in fish-bearing lakes but occur frequently in fishless lakes, suggesting fish stocking has adversely affected habitat for this species (Bahls, 1987).

Six mountain lakes may historically have supported indigenous westslope cutthroat trout (Bahls, 1987). Of these, one is now exclusively populated with non-native brook trout, four have been stocked with non-native cutthroat trout, and one continues to support indigenous cutthroat with no stocking history.

AQUATIC SPECIES

SUBBASIN AQUATIC SPECIES FINDINGS

Westslope Cutthroat Trout

Westslope cutthroat trout remain widely distributed across both subbasins (Map 23). Current distribution is similar to historic distribution. The migratory component of this metapopulation is intact and relatively strong, although it may be functioning at risk in the Middle Fork Clearwater River due to angling pressure and harvest. Numerous subpopulations are located across the Selway subbasin. Subpopulations are generally connected to the river, but distance or natural barriers may functionally isolate some subpopulations. Existing connectivity is similar to historic connectivity.

Westslope cutthroat trout may have been extirpated in some headwater reaches through interspecific competition with non-native brook trout, which have encroached into streams from mountain lakes (USFS unpublished data, 1990-1999). Brook and cutthroat trout occur sympatrically in other reaches, often with cutthroat trout more abundant (USFS unpublished data, 1996). Habitat factors determining the success or failure of cutthroat trout have not been defined.

The genetic integrity of some westslope cutthroat trout subpopulations may be less than the historic integrity, due to possible introgression with non-native cutthroat trout. These changes have potentially occurred across the landscape at higher elevations. Similar to brook trout, non-native cutthroat have been stocked in mountain lakes and have immigrated to connected streams

(Bahls, 1987; IDFG unpublished data, 1990-1999). Stocking of non-native cutthroat was more widespread than stocking of brook trout (IDFG unpublished stocking records, n.d.).

The Selway subbasin continues to support substantial amounts of habitat with very high potential to support westslope cutthroat trout (Map 23). Habitat for westslope cutthroat trout has been changed due to human-caused press disturbances in some high or very high potential watersheds. These impacts may have resulted in reduced carrying capacity from increased deposited sediment, reduced large woody debris recruitment, loss of pools, and simplification of habitat. On a landscape level, significant areas of high and very high potential streams remain unaffected by human disturbance (Maps 23 and 27).

Harvest of fluvial and resident cutthroat trout and introduction of non-native species are the key factors responsible for current declines in westslope cutthroat trout in the assessment area. Although some subpopulations no longer exist, in general cutthroat trout in the assessment area are probably at low risk of extinction due to high connectivity, high habitat integrity, relatively high abundance, and the roadless and wilderness status of much of the Selway subbasin.

Bull Trout

Bull trout remain widely distributed throughout the Selway subbasin (Map 24), although distribution is patchy. Current distribution is similar to historic distribution. Abundance may have declined from historic levels, but the species is not at high risk of imminent extinction. Both migratory and resident forms are present in the analysis area.

The Selway subbasin supports large amounts of habitat with high to very high potential to support bull trout (Map 24), principally in high elevation aquatic landtype associations (ALTAs 1, 2, and 4). Habitat in high and very high potential areas remains in high quality condition with little change in the disturbance regime. Suppression of wildfires may have decreased the disturbance frequency in some areas.

Harvest of adult bull trout and the presence of introduced species (such as brook trout) constitute the primary threats to bull trout in the assessment area.

Steelhead/Redband Trout

Steelhead/redband trout remain widely distributed across both subbasins (Map 22). Abundance of the anadromous form varies by year and stream and is correlated with numbers of returning adults. Other factors affecting abundance include habitat quality, habitat accessibility, and mortality from harvest.

Redband trout, the resident form of this species, appear to comprise a significant portion of some steelhead/redband populations in the Selway subbasin. Resident redband trout and anadromous steelhead pre-smolts exist in sympatry in several watersheds but differ in their physical appearance (Huntington, 1996). Both physical appearance and adoption of a resident life history strategy suggest that a degree of genetic divergence may have occurred, possibly accentuated by lower numbers of returning adult steelhead trout.

The Selway subbasin supports substantial areas rated with high or very high habitat capability to support steelhead/redband spawning and rearing (Map 22). A majority of fifth code HUC watersheds are classified as stronghold watersheds, which indicates both undegraded habitat and high population strength (Map 26). The Selway subbasin is thus considered a high priority area for recovery of this species in the upper Columbia River basin. Habitat potential for steelhead/redband trout has been reduced from human-caused press disturbances in two historic stronghold watersheds.

No known hatchery supplementation of steelhead trout in the Selway subbasin has ever occurred. It is highly likely that current genetic composition of this population is similar to the historic composition. Key spawning and rearing areas for anadromous steelhead trout are highly associated with the breaklands ALTAs, suggesting inherent resistance and resilience in this species in relation to short-term environmental perturbation.

Downstream effects probably contribute most to the risk of extinction of the anadromous component of the population in the analysis area. Even given impacts to habitat and angling mortality, which cumulatively contribute to the risk of extinction, downstream effects easily carry the majority of the risk. The resident component is probably not at risk of extinction.

Spring Chinook Salmon

Spring chinook salmon are distributed in many areas of the assessment area (Map 21), but distribution is not considered widespread, and abundance is presumably much less than occurred historically. Salmon are currently found in the highest numbers in high order, low elevation tributaries flowing through the breaklands ALTAs. Abundance of spring chinook has declined over the past century through a combination of downstream effects and local habitat degradation.

The Selway subbasin supports significant amounts of habitat with moderate and high potential for this species (Map 21). Only one stronghold area has been identified, although habitat strongholds are found throughout most of the upper Selway subbasin (Map 25). This reflects both lack of population strength and quality of habitat present for this species. Existing populations are maintained tenuously with the use of hatchery supplementation, which may also put the population at risk. Supplementation of naturally produced spring chinook salmon may prevent extinction in the short-term but may have deleterious impacts on the long-term persistence of this species in the assessment area.

Spring chinook salmon in the assessment area are at high risk of extinction. Downstream effects contribute most to this risk. Habitat degradation is not a major determinant in most cases, because degraded watersheds were probably not historically as important to salmon as watersheds in roadless areas. Clear Creek is one notable exception. In addition, the illegal taking of adult salmon in August and September, even if not widespread, could jeopardize the long-term persistence of salmon in the Selway subbasin.

Other Aquatic Species

The assessment area supports an array of native aquatic organisms besides the salmonid species discussed above. Data on most of these species are lacking, however. Other native fish known to inhabit the assessment area include mountain whitefish, northern pikeminnow, longnose dace, mottled sculpin, pacific lamprey, and suckers (unknown species). Of these, mountain whitefish are probably the most abundant. Anecdotal accounts suggest the historic presence of a large, mainstem spawning, ocean-type chinook salmon in the Middle Fork Clearwater and lower Selway Rivers, generally observed in mid- or late fall. If such a fish existed, it was likely a fall or summer chinook salmon. Known non-native fish include brook trout, coho salmon, Yellowstone cutthroat trout, and smallmouth bass.

Non-fish species include a wide variety of macroinvertebrates, mussels, filamentous algae, diatoms, mosses, and various vascular aquatic plants.

SUBBASIN AQUATIC HABITAT AND SPECIES RECOMMENDATIONS

General subbasin recommendations for aquatic species and habitat fall under two broad categories. These categories include:

- Restore habitat in lower Selway River and Middle Fork Clearwater River tributaries.
- Conserve native aquatic organisms throughout both subbasins, but particularly in the wilderness and roadless portions of the Selway subbasin.

Restoration actions included under the first category are found in the hydrology and watershed section of this chapter. These actions are focused at the fifth code HUC scale and generally include recommendations for watershed restoration. Conservation actions included under the first category include restoration of fire to most watersheds and a fine-scale assessment of site-specific changes to habitat from localized impacts.

Conservation actions associated with the second category include the following actions at the subbasin scale. For salmonid fishes, the primary actions include monitoring and possible control of brook trout, the most widespread introduced non-native fish species throughout the assessment area. This action is a very high priority. Unfortunately, effective reduction or removal of brook trout from both lake and stream environments generally requires methods that are inconsistent with social values associated with designated wilderness and/or involve socially unacceptable risks to non-target species. In addition, the removal of any fish population from a mountain lake, regardless of other biological and social issues, could be viewed as socially unacceptable despite the ecological benefits. Proposals to reduce or remove brook trout from a mountain lake should thus include careful consideration of the social risks and costs involved, as well as a realistic assessment of the effort required to achieve success in relation to the probability that success can be achieved.

The only known effective method for permanent reduction or removal of undesirable fish is the use of piscicides such as rotenone and antimycin, which are also toxic to non-target species. Methods still in the experimental stage include blasting and introduction of biocontrol agents. Less risky methods include netting and electro fishing; neither of these methods has proven effective in broad scale, long-term reduction or removal of undesirable fish from lake environments. Knapp and Matthews (1998) achieved limited success in removing brook trout from one mountain lake in the Sierra Nevada after repeated gill netting over several years. Success was based a narrow range of criteria focused on lake morphometry. Small lake size, presence of barriers at the outlet stream, and lack of significant streamflow into or out of the lake appeared to be the required attributes to achieving success. The applicability of this technique to mountain lakes in the Selway subbasin is presumably dependent on target lakes meeting these criteria.

Lakes in the subbasin that are currently fishless, especially deep lakes, should remain fishless to preserve deep lake ecosystems. This recommendation is a very high priority. Stocking of any species besides westslope cutthroat trout in any lake to provide angling opportunities should not occur. Effects to the genetic integrity of indigenous westslope cutthroat trout from hatchery westslope cutthroat trout should be carefully considered. Currently, the state of Idaho stocks only a small percentage of mountain lakes in the subbasin.

Other conservation actions include acquiring data to determine the extent, if any, of introgression of westslope cutthroat trout subpopulations. This recommendation is a high priority. The methods required to achieve this information are generally non-controversial and do not include the sacrifice of individual fish. Additional conservation actions generally include monitoring and data collection to address data gaps.

LANDSCAPE ECOLOGY

SUBBASIN LANDSCAPE ECOLOGY FINDINGS

Many areas of the subbasin are relatively intact compared to other subbasins in the interior Columbia River basin. However, the effects of fire exclusion have been pervasive across the subbasin, and the effects of timber harvest have been locally important in departures from historic conditions of composition, structure, and function. The effects of introduced organisms have had highly significant impacts in a few specific situations.

Pattern of Plant Communities in the Landscape

Early Seral Communities: With fire suppression, advancing succession, and timber harvest, open early seral communities have decreased in average and maximum patch size, but only slightly in extent. Where once they occurred in all terrain settings, they are now more likely to be found only in warm canyons, high elevation ridges, or harvest units. Early seral closed forest has increased greatly in extent and maximum patch size, as old burns have reforested.

Mid-Seral Communities: Mid-seral open forest has increased, while closed canopy mid-seral forest has decreased, perhaps due to increased pathogen activity or transition to later seral stages.

Late Seral Communities: Late seral open forest has decreased greatly in extent and maximum patch size, due to fire suppression. Late seral closed canopy forest has decreased and large patches have been fragmented, probably due to harvest of old growth in the western portion of the subbasin.

Plant Community Composition

Whitebark pine has decreased dramatically due to fire suppression, blister rust and mountain pine beetle activity. Alpine larch has also decreased. Large ponderosa pines in open stands have decreased due to fire suppression and forest succession. Increases in more shade tolerant species like grand fir and western red cedar have occurred with fire suppression and forest succession. Old burns now support lodgepole pine. Shrublands have decreased with forest succession. Recent burn patches have decreased. Annual grasslands and noxious weeds have become established on open, low elevation, steep, south-facing slopes. Western white pine has decreased from its minor historic levels due to blister rust and forest succession. Montane park has increased as old burns and denuded areas have revegetated, or whitebark pine has been lost.

Plant Community Structure

Nonforest plant communities have decreased due to forest establishment on old burns. Timber harvest and recent burns have not occurred at the same rate and with the same ecological effects as presettlement fire disturbance. Seedling-sapling and pole forests have increased due to tree growth on old burns. A decrease in the large tree component may be due to extensive timber harvest in old growth.

Areas in low tree canopy cover and total forest cover have increased with the increase of young forests on old burns. The area in moderate tree canopy has decreased, probably due to transition to high canopy cover in increasingly dense stands due to fire suppression and succession.

Pathogen and Insect Activity

Susceptibility to pathogens and insects associated with late seral tree species like true fir and Douglas-fir has increased with successional shifts toward these tree species and away from more resistant species like pine and larch. The pathogens include root rots and spruce budworm. Susceptibility to insects associated with larger, aging trees like Douglas-fir and lodgepole pine has increased with succession and fire suppression. Whitebark pine has widely succumbed to blister rust and mountain pine beetle activity. Increasing stand densities mean that more stands are under competitive stress for moisture and nutrients than would have been in presettlement times. Such stress makes them more susceptible to pathogens and insects that might otherwise operate at endemic levels.

Fire Regimes

Over much of the subbasin, fire is allowed to burn much less often and over smaller areas than during presettlement times. The interval between fires has increased most markedly in the areas once dominated by very frequent and frequent fire. This departure from historic condition and the consequent increased fuel quantities and continuity indicate that future fires could have more severe watershed effects and effects on successional processes than fires during presettlement times.

Plant Communities of Concern

Whitebark pine communities have been most affected in the subbasin. A 92 percent decline in whitebark pine-dominated communities appears to have occurred. Montane park or mixed subalpine forests have replaced the pine communities. Aspen and other hardwood communities appear to have decreased as a result of fire suppression, but changes at this fine scale are poorly

tracked. Mountain grassland communities have been severely impacted at low elevations along the river corridor by non-native plants. Open ponderosa pine forests have decreased with encroachment of more shade tolerant Douglas-fir and grand fir. Groves of very large old cedar have been fragmented by timber harvest. Habitat for coastal disjunct plant species has been impacted by fire exclusion, road construction, and recreational use.

Old Growth

The total area in mature forests is greater today than historically, but large blocks of mature and old growth mesic conifer forests have been highly fragmented by timber harvest in the western portion of the subbasins. In canyons and higher elevation glaciated settings, mature and old growth forests have likely increased as a result of fire exclusion. More multilayered, mixed-species old growth occurs, while open ponderosa pine old growth has decreased.

Snags

Snag production from episodic large fires or from more frequent smaller fires has declined as a result of fire exclusion. As a consequence, the large snag patches of several hundred to thousands of acres that once were generated every 15 years or so are not being generated. Fire exclusion, succession, increasing stand density, and consequent stress and pathogen activity, appear to be resulting in increased production of smaller, more uniformly distributed snags, such as those that occur in the extensive root rot patches. Snags of long-lived species like ponderosa pine or larch are expected to increase as these species die off in favor of more shade-tolerant firs, which will not produce snags of the same size or longevity over the long term. Cedar snags, however, are very long lasting, and recruitment is likely to increase in the west portion of the subbasin as succession proceeds.

SUBBASIN LANDSCAPE ECOLOGY RECOMMENDATIONS

In spite of the largely wilderness and roadless character of the subbasins, landscapes at all elevations show moderate to high departure from presettlement conditions because of effective fire exclusion since about 1935. Conservation themes are generally applicable only to a few ERUs or a few elements, where conservation means saving what remains, in terms of either condition or process. Restoration, even in wilderness areas, will be required to recover the array of communities, habitats and species that the assessment area supported before Euro-American settlement.

Two general recommendations concisely summarize the vegetation restoration themes for these subbasins:

- Restore landscape and plant community composition, structure and function through restoration of natural disturbance regimes or well-designed simulations of natural disturbance regimes.
- Restore plant community and genetic integrity through control of non-native species and revegetation with native plant species from locally adapted sources.

More specific recommendations are subsets of these general themes and reflect the highest priorities at the subbasin scale. Priorities may be different at the ERU scale.

High Elevation Forests

Vegetation response units (VRUs) 2 and 9, and portions of VRU 1, have been most markedly affected by the decline of whitebark pine and alpine larch.

- Inventory whitebark pine for condition and trend in areas where active restoration can occur. Iron Mountain and Running Creek are two examples where slashing and prescribed fire could be used and local seed sources propagated.

- In wilderness areas identify fire scenarios best adapted to maintain or regenerate whitebark pine and alpine larch based on the species conditions and threats. Use this information to develop wildland fire use prescriptions.
- Collect and store whitebark pine seed from stands that appear to have developed any rust resistance. Use this seed to provide planting stock for areas where planting is appropriate.
- Analyze past fire behavior to determine if increased use of wildland fire can be supported. Priority is very high.

Low Elevation Grasslands and Open Dry Forest

Vegetation response units (VRUs) 3 and 12 have been highly impacted by invasion of noxious weeds and non-native grasses and forbs.

- Inventory weed and non-native plant communities. Middle and Upper Selway Canyon ERUs are highest priority.
- Collect and propagate native grasses and forbs from intact communities to provide restoration materials.
- Secure areas in relatively good condition with weed treatments. In areas needing more comprehensive approaches, increase emphasis on weed treatment and active restoration using native plant materials. In areas adjacent to other land ownerships, establish and nurture partnerships to accomplish these objectives. Priority is very high.

Low Elevation Dry and Moderately Moist Forest

Vegetation response unit (VRU) 3 has been impacted by fire exclusion, with consequent increases in stand density, multi-layered stands, and increases in grand fir and Douglas-fir.

- Conduct the necessary analysis to support expanded wildland fire use in appropriate areas.
- Conduct the necessary analysis to support expanded use of management-ignited fire in appropriate non-wilderness areas.
- Include use of management-ignited fire in dry forests in conjunction with harvest activities, or in neighboring stands.
- Use harvest where appropriate to reduce dense understories of fir.
- Conserve existing large ponderosa pine and larch. In mixed conifer stands in canyons on moister aspects, conserve existing pine and larch, reduce stand densities, favor development of one and two-story stands with pine or larch overstories or legacy trees as available, and provide increased amounts of snags and early seral habitat, including hardwoods and shrubs. See recommended guidelines for snag retention in Appendix I. Priority is high.

Moist Maritime Forest

Vegetation response units (VRUs) 7, 8, 10, and 17 have been impacted by timber harvest on uplands and by harvest and fire exclusion in canyons.

- On uplands, conserve existing old growth and restore old growth through allocation of larger proportions of VRU 7, 10, and 17 to old growth in contiguous blocks.
- Conserve Pacific yew.
- In canyons (VRU 8), restore age class diversity and importance of seral species by use of fire or harvest.

FIRE

- Introduce rust resistant white pine planting stock where appropriate.
- Favor deferred regeneration where there is potential for shrub and hardwood seral stages.
- Emphasize snag production in some dense patches as well as early seral habitat.
- Favor mixed severity treatments as often as stand replacing treatments.
- Conserve all groves of very large (25 inches DBH or more) cedar old growth. See recommended guidelines for old growth in Appendix H.
- Inventory treatment areas for coastal disjunct species and adapt treatments to favor their conservation as species and well distributed populations, within the range of natural disturbance dynamics.

Priority for old growth conservation is very high. Priority for snags and hardwood production is high. Priority for restoration of age class diversity and early seral habitat production is moderate.

Mid Elevation Cool Forest

Vegetation response units (VRUs) 1 and 6 where lodgepole pine was historically dominant have been impacted by fire suppression. Landscape level diversity has been reduced, particularly early seral habitat including snags, herbaceous, shrub, seedling-sapling and pole stages, and diversity of patch size.

- Conduct the analysis necessary to support expanded wildland fire use in appropriate areas.
- Conduct the analysis necessary to support expanded use of management-ignited fire in appropriate non-wilderness areas.
- Include the use of prescribed fire in VRUs 1 and 6 in conjunction with harvest activities, or in neighboring stands.
- Use harvest where appropriate to reduce true fir components. Harvest should simulate mostly stand replacement, but conserve existing larch or other legacy trees, provide for recruitment of future residual overstory trees, and provide dense patches of snags. See recommended guidelines for snag retention in Appendix I. Priority is moderate.

FIRE

SUBBASIN FIRE FINDINGS

Historic and Current Fire Regimes and Smoke Production

Fire regimes in the subbasin were historically dominated by infrequent and very infrequent mixed and lethal regimes, with more frequent, lower severity fire in canyons and on open high elevation ridges. Large fires of more than 1,000 acres occurred about every 3 years in the subbasin, from 1870 to 1934. About 22,285 acres burned annually on the national forest lands. Very large fires at 10 to 20-year intervals produced long lasting, very large smoke plumes that affected the Bitterroot Valley and blanketed downstream canyons during inversions. In about 85 percent of the years from the record of 1870 to 1934, smoke production was more limited in duration and extent, but still substantially more frequent and longer lasting than from 1935 to the present. From 1935 to 1978, when fire suppression was the policy on all lands in the subbasin, about 314 acres burned annually, a decline of more than 95 percent. Since the implementation of the fire use program in the Selway-Bitterroot Wilderness from 1979 to 1996, about 8,842 acres have burned annually. This still amounts to only about one-third of the historic rate. Concerns about smoke production, as well as other concerns, have constrained wildland fire use to levels substantially below historic fire occurrence.

Changes in Fuel Quantity and Continuity

Patterns of fuels that existed in the 1930s contrast strongly with those that occur today. Areas of grasslands, shrublands, and seedlings and saplings less susceptible to severe fire have declined, while areas of mature forest with greater fuel accumulation and connection of ground fuels to the tree crowns have increased. Areas with fuel accumulations and distributions outside the range of historic variability may pose increased risk for large fires, more severe in fire intensity and impacts to watersheds and plant communities, compared to presettlement times. Based on plant community structure, the White Cap Creek, Indian Creek, Deep Creek, lower Running Creek, and Upper Selway Canyon areas show strong evidence of unnaturally high fuel accumulations.

Areas Outside their Disturbance Interval

Over much of the subbasin, fire frequency has been much less in the past 60 years than in prior years, as far back as the 1500s. The interval between fires has increased most markedly in the very frequent and frequent fire regimes in the canyons. Based on departures in fire intervals, the Whitecap Creek, Indian Creek, Deep Creek, lower Running Creek, Little Clearwater, and upper Selway canyon areas show strong evidence of likelihood for more severe fire behavior and effects than occurred historically. It is likely that fuels in these areas have increased in quantity and ability to carry fire into the tree crowns and have the potential to burn with greater lethality and effects to plant communities and watersheds.

Increased Risk of More Severe Fires

High ignition probabilities, based on recent fire starts, and departures in fuels or fire regimes do not coincide spatially in the subbasin. High rates of ignition occur in the western portion of the subbasin and fuels concerns are highest in the eastern portion of the subbasin. This generalization may not hold well in any specific fire weather situation or lightning strike location, however. Based on the pervasive effects of fire exclusion in the subbasins, and considering harvest disturbance has occurred only in limited areas, there appears to be a substantially higher risk of large severe fires across more of the subbasins than would have been typical of presettlement times. Even at high elevations, areas of mature forest and higher fuel loads are more continuously distributed in the landscape than historically.

Increased Difficulty of Structure Protection

As continuity and quantity of fuels have increased, the risk of loss of private property and administrative structures has increased. Structure protection is a costly component of fire use and fire suppression in the assessment area. Structures are usually located at low elevations in xeric settings where departures from presettlement fire regimes are most marked, and risks of fire damage have increased the most.

SUBBASIN FIRE RECOMMENDATIONS

Recommendations for fire use and management in the Selway and Middle Fork Clearwater subbasins are shown in Map 36. This map shows three main areas of recommended fire management emphasis on national forest lands.

Areas with Fire Use Plans in Place

The wilderness areas and some adjacent unroaded areas including much of Rackliff, Gedney and East Meadow Creeks have fire use plans in place. It is evident, from the analysis presented in Chapter 4, that natural fire regimes are still highly constrained under these fire use plans and consequent departures of ecological condition and process are marked. Some of this constraint may be due to poor information on fuel complexes within the wilderness areas. More site-specific information, or improved modeled information about fuel conditions and likely fire behavior and effects is warranted in these areas. Treating fuels in adjacent non-wilderness areas with prescribed fire could reduce risks to values on adjacent lands, and increase opportunities to let fire play a more natural role within the wilderness areas. Prescribed fire may be needed in some areas with fire use plans in place, including wilderness areas, to help transition to fuel conditions

where naturally ignited fires can be allowed with less risk of unnaturally high ecological or social effects.

Additional Areas Proposed for Wildland Fire Use for Resource Benefits

The west side of Meadow Creek in the unroaded area, and the O'Hara Creek Research Natural Area (RNA) are proposed for modified wildland fire use. They are unroaded, large, intact areas where timber harvest is restricted. The west side of Meadow Creek is adjacent to the large area to the east where a fire use plan is already in place. Meadow Creek itself is a relatively difficult boundary to defend from fire passage. The O'Hara Creek RNA is within a generally moist forest and alder field setting where fire typically has little opportunity for rapid spread. In either of these areas there is currently no other mechanism than prescribed fire to sustain disturbance regimes. Because both of these areas are closer to developed lands and the forest boundary, it is recommended that wildland fire use and prescribed fire use be implemented under tighter constraints than in East Meadow Creek and the wilderness areas. Additional analysis in consideration of this recommendation is necessary.

Areas Recommended for Continued Prescribed Fire Use

The rest of the national forest lands within the assessment area are recommended for continuation of prescribed fire use to reduce fuel loads, risk of unnaturally high fire effects, and stand density as appropriate. Areas around private and administrative structures both within wilderness and roadless areas should be evaluated for prescribed fire use, to reduce risk of loss, and costs and danger of structure protection during wildfires. Opportunities to acquire private inholdings that are difficult to protect should be pursued, recognizing that by reducing the future costs of protection the market value of such properties could be easily recouped.

WILDLIFE

SUBBASIN WILDLIFE FINDINGS

Large parts of the subbasins are designated wilderness and roadless and provide effective and secure habitat for a large diversity of species. But in some cases, departures from presettlement conditions have significantly influenced or have the potential to influence the subbasins' wildlife habitats and populations. The Wilderness Act, which governs a large portion of the Selway subbasin, applies higher standards of naturalness to wilderness conditions than to non-wilderness conditions, including wildlife populations and habitats. As a result, similar impacts occurring in both wilderness and non-wilderness are more significant within wilderness.

The most important mechanisms of departure from presettlement conditions in wildlife habitats and populations in the subbasins include:

- Fire suppression throughout the subbasins
- Weed introductions in xeric habitats throughout the subbasins
- Timber harvest and road construction in accessible habitats in the lower Selway subbasin and throughout the Middle Fork Clearwater subbasin
- Residential and agricultural development in the lower Selway subbasin and Middle Fork Clearwater River subbasin.
- Construction of Highway 12 and motorized access to winter range in the upper Selway and lower Selway and Middle Fork Clearwater subbasins
- Introduction of non-native fish and wildlife species
- Historic hunting and trapping that led to species extirpations
- Construction of the Lewiston Power Dam and subsequent loss of native salmon runs that were important to grizzly bears

The following discussions on habitats and populations focus on important departures from historic conditions and potential threats.

HABITAT INTEGRITY

Disturbance Dynamics

Landscape processes in the subbasins include chronic natural disturbances that affect wildlife habitat through vegetation succession, insect and plant pathogen influences, climatic changes, and changes in fire frequencies and intensities, and catastrophic disturbances like fire, storms, and floods.

Fire: Wildlife habitats in the upper portion of the subbasin, including Running and Goat Creeks, Upper Selway Canyon, Whitecap Creek, Indian Creek, Deep Creek, and the Little Clearwater portion of the upper Selway Headwaters ERUs have been influenced most by fire exclusion. Some of the private lands in lower Clear Creek and Middle Fork Clearwater ERUs also indicate significant increases in fuel accumulations and missed fire intervals. In the absence of fire, forage productivity, snag recruitment, and important recently burned patch habitat, which black-backed woodpeckers and other species are dependent on, has been reduced.

Prescribed fire ignitions in the Lower Selway Canyon and North Selway Face ERUs may be occurring more frequently than would naturally occur. Most spring fire ignitions have concentrated on the north side of the lower Selway River and the east side of Meadow Creek. Spring fire ignition has implications for species with increased vulnerability during spring breeding, denning, and nesting periods and for vegetation that is not physiologically adapted to accommodate fire in the growing season. Spring burning does not have the same influence on resprouting and invigorating forage that fire in the dry season does.

Insects and Plant Pathogens: Changes in species composition and canopy density due to fire exclusion and logging practices probably have increased the levels of insect populations and plant pathogens in the subbasins. The increased insect population levels benefit subbasin species that forage on insects, including woodpeckers and migratory landbirds. But long-term implications of artificially high infestations may be the reduction of forest cover with associated impacts to wildlife habitat. The combination of fire exclusion and blister rust disease has imperiled whitebark pine with negative influences on associated dependent species in alpine habitats.

Composition

The most significant changes in subbasin habitat composition include marked declines in whitebark pine due to the blister rust pathogen and fire suppression, and declines in ponderosa pine, also due to fire exclusion. These departures have significant implications for subbasin animal species that are strongly associated with whitebark pine and ponderosa pine communities. In the absence of fire, species with more shade tolerance like grand fir, western red cedar, and lodgepole pine have increased. Shrublands are also less well represented, with resulting reductions in habitat for migratory landbirds and other species.

Weed infestations have changed species composition and fire dynamics in dry, winter range grasslands where native bunchgrass forage has been diminished. These habitats are important for bighorn sheep, elk, mule deer, white-tailed deer, and their predators, including wolves, mountain lions, bobcats, wolverines, and bald eagles. The weed invasions have also diminished habitat for native mountain quail that require more open ground cover for movement through their habitat. The lower Middle Fork Clearwater area, lower Clear Creek area, and the north and east sides of the Selway canyon have been most impacted by weed infestations. The reduction in availability and quality of winter forage is detrimental to ungulates, and to the carnivores that prey on ungulates.

Structure

Canopy Density: Forest canopy density has been significantly influenced by fire exclusion in the subbasin. High canopy density has increased with related declines in moderate canopy density.

Many species of owls and hawks, including white-headed woodpeckers, flammulated owls, and northern goshawks, require more open, lower canopy density habitat for foraging. Higher canopy densities also may result in artificially high levels of insect populations and plant pathogens.

Early and Mid-Seral Forests: Ungulates and their predators, small mammals, mountain quail, and many migrant bird species are dependent on early seral habitats and shrublands. Bighorn sheep rely on open, early seral habitat, not only for forage, but for long sight distances to avoid predators. Mid-seral forest often provides foraging habitat and thermal and hiding cover for numerous species. Changes due to fire exclusion include a general decrease in unforested, early seral habitat. However, unforested openings where timber harvest has been extensive in the lower Selway and Middle Fork Clearwater areas have increased. Mid-seral habitat structure has dramatically increased as a result.

Old Forests: Many subbasin species depend on various types of old forests. White-headed woodpeckers and flammulated owls are associated with old ponderosa pine. Old ponderosa pine structure has significantly decreased because of logging in the lower subbasin and fire suppression throughout the subbasin. The most significant representation of old ponderosa pine and Douglas-fir forests in the subbasin occurs in the Selway River canyon above Moose Creek in the wilderness portion of the Selway subbasin. These communities are concentrated on the east side of the canyon with the largest patches occurring in the Whitecap Creek drainage.

Xeric ponderosa pine and Douglas-fir old growth habitats are important for white-headed woodpeckers and flammulated owls. Mesic old growth provides habitat for lynx, fishers, goshawks, great gray owls, and moose. Restoration of old whitebark pine is critical for the interdependent species assemblage that it supports, including grizzly bears.

Great gray owls, goshawks, denning lynx, moose, and some species of migratory songbirds depend on old, mesic, coniferous forest. In the wilderness portion of the subbasin, old mesic forests are concentrated in the Bear, Moose, Running, Mink and Marten Creek areas. In the lower Selway and Middle Fork Clearwater subbasins, the Meadow Creek, O'Hara Creek, Goddard Creek, upper Clear Creek, upper Middle Fork Clearwater canyon, and lower Selway canyon areas have significant old, mesic forest structures. Large patches of old western red cedar and Pacific yew communities important to moose are unique old forest elements that contribute to wildlife habitat in the subbasins. Although timber harvest has fragmented mesic, old forests in the lower subbasins, old forests are better represented across the subbasins than in presettlement times as a result of fire suppression.

The largest patches of old, whitebark pine forests in the subbasins occur in the headwaters area of Mink and Marten Creeks on the divide between the Selway River and Meadow Creek, and in the headwaters area of Pettibone Creek at Wahoo Peak. Other significant old, whitebark pine forest occurs on the main divide ridges that bound the Selway subbasin. Old, cone-bearing whitebark pine structure has dramatically decreased in the Selway subbasin as a result of fire suppression and subsequent blister rust disease. Mature whitebark pine is an important food source for an interdependent species assemblage that includes grizzly bears.

Dead and dying trees are an important and limited component of old forest habitat. Snag production and dead wood recruitment in the subbasins has declined due to fire suppression. Firewood cutting in the subbasins primarily targets standing snags, a rare habitat feature important for feeding, nesting, and perching. Although primarily restricted to roadside access in the Middle Fork, O'Hara and Goddard Creeks, and Clear Creek ERUs, these localized impacts are intense where they occur. During timber harvest and fire suppression activities, snags are often felled to ensure worker safety. Downed wood, also an important habitat component, is frequently removed following timber harvest to reduce fire risk.

Function

Genetic Interchange and Population Dispersal: Most of the areas in the subbasins provide intact habitats that should adequately provide for genetic interchange and population dispersal.

However, extensive logging and road construction from 1960 through the 1990s in the Middle Fork Clearwater, O'Hara and Goddard Creeks, and Clear Creek ERUs has contributed to fragmentation of old growth habitats in the developed portions of the subbasins. Fire exclusion has artificially increased the risk for eliminating patches of old forest habitat due to greater fuel accumulation. Conversion of private lands to agricultural and residential development in the lower subbasins has also increased habitat fragmentation. The significance of these influences on genetic interchange and population dispersal in the subbasins is unknown.

Habitat Connectivity: Although timber harvest, agricultural, and residential development has fragmented habitats in the lower subbasins, habitat connectivity probably is functional for most species in the largely undeveloped areas of the subbasins.

Large areas of the subbasins are mountainous and highly dissected. Most major corridors available to large-bodied species like ungulates and carnivores are associated with riparian zones and ridgetops. Wide ridgetop corridors are uncommon, but the major ridges that divide the Selway from the Lochsa River, Bitterroot Valley, Salmon River, and Meadow Creek are undoubtedly important travelways for ungulates and carnivores.

An important travel corridor in the Selway subbasin is East Fork Moose Creek, a wide, flat, valley bottom that connects the Bitterroot Valley with the Selway River. This corridor was historically important to wolves and probably to grizzly bears as well.

Running Creek connects the upper Selway River with Meadow Creek, and with the Salmon River through Bargamin Creek. If bighorn sheep migrate between the Selway and the Salmon Rivers, they probably use this route. Meadow Creek and O'Hara Creek connect the lower Selway River with the wide valleys and significant meadow complexes of the Red River, the American River, and Newsome Creek, tributaries within the South Fork Clearwater subbasin. These corridors are important for ungulate and carnivore migration between the summer range meadows at higher elevations and winter range in the Selway subbasin.

Clear Creek connects summer range in the Newsome Creek area with winter range in the lower Middle Fork Clearwater area, although the integrity of the corridor and winter range is compromised by agricultural, commercial, residential, and road development. Several drainages connect the Lochsa River with the Selway River and its East Fork Moose Creek tributary.

SPECIES AND POPULATION INTEGRITY

Extirpations and Reintroductions

The gray wolf, historically a primary predator in the subbasins, was largely eliminated by hunting and trapping from all of north central Idaho by the 1930s. Wolf reintroduction to north central Idaho was initiated in 1995, and wolves are successfully reproducing. At least two packs occupy the subbasins today.

Grizzly bears were common in north central Idaho and the Bitterroot Mountains until the early 1900s when hunters, trappers, and sheepherders eliminated them from the region. Construction of the Lewiston Power Dam in 1927 eliminated the native salmon runs the Bitterroot grizzly bears depended upon as a food source. Whitebark pine, an important grizzly food source, has been reduced to remnants of its historic occurrence. Grizzly bear recovery planning is ongoing. The U. S. Fish and Wildlife Service prepared the *Final Environmental Impact Statement for Grizzly Bear Recovery in the Bitterroot Ecosystem* in March 2000, and the decision to reintroduce grizzlies has been signed.

Mountain quail are indigenous to the subbasin and few, if any, exist today. Fire suppression and loss of early seral communities that provide shrub galleries (tunnels or passage ways) have undoubtedly contributed to the decline of mountain quail habitat in the subbasin. Extensive cheatgrass and other weed species invasions in xeric habitats have increased ground cover density that reduces the ability of mountain quail to travel through their habitat. Grazing has contributed to direct habitat loss or deterioration in some areas, but has improved habitat by

opening dense ground cover in other areas. Mountain quail are also vulnerable to hunting in sparse habitats in xeric ranges. Little is known about the influences of introduced gallinaceous birds on mountain quail, but habitat competition from these populations may also be a factor. There is some evidence in research literature (Heekin, 2000) of disease decimating entire populations in one season, which indicates the presence of introduced organisms that mountain quail are not adapted to.

Introduced, Non-Native Species

Many of the mountain lakes within the Selway subbasin have been stocked with non-native fish. Almost all these lakes were originally fishless. The introduced fish have impacted native amphibian, reptile, and insect populations that occupy the lake habitats. Eastern brook trout are the most prolific of the introduced fish species and pose the greatest threat to native terrestrial populations. Spotted frogs and long-toed salamanders are usually common or abundant at fishless lakes and less common, rare, or absent at lakes with fish present. Low insect populations result in lower diversity of insect-feeding birds and increased presence of fish-eating birds including ospreys, great blue herons, and kingfishers. Lakes that remain in a fishless condition, particularly deep lakes, may play an important role in maintaining the genetic pool of native species in the Selway subbasin.

Several species of non-native gallinaceous birds have been introduced into the subbasins or have expanded their populations into the subbasins from adjacent lands. These include California quail, chukar partridge, ring-necked pheasant, and Merriam's wild turkey. Merriam's wild turkey is the most recently introduced species, and populations in the last few years have dramatically increased. They are common along the Middle Fork Clearwater River and the lower Selway River. Individuals have also been reported as far upstream as Moose Creek Ranger Station in the wilderness. Little is known about how these introduced species influence native gallinaceous birds. Some experts speculate that they may compete with natives for habitat, parasitize nests, and carry pathogens that are lethal to the native birds.

Security

Access by Motorized Vehicles: Highway 12, adjacent to the Middle Fork Clearwater River, is an important linear barrier to many species. Although impacts to large-bodied ungulates are common, they are probably not as significant as the impacts to smaller-bodied species including amphibians, small mammals, and carnivores attempting to cross between the forested uplands and the riparian habitat along the river. Fishers are sometimes seen attempting to cross the highway between the uplands that provide cover and the river environment they are strongly associated with.

Forest roads that may present barriers to movement to and from riparian habitat are located in the Deep Creek, Upper Selway Canyon, and Clear Creek ERUs. Some forest roads and trails probably are not important barriers to movement, but do have implications for species vulnerability relative to security. Impacts to species from motorized traffic are greatest in denning, calving, and nesting areas during breeding and natal periods, and on winter range in wintering periods. Motor vehicle access increases vulnerability of hunted species during hunting seasons. Open road density is highest in Clear Creek and Middle Fork Clearwater River ERUs, with three to five mi/mi² in some areas.

Winter snowmobile users in the subbasins access winter range and high elevation habitats in Clear Creek, Meadow Creek, Lower Selway Canyon, North Selway Face, O'Hara and Goddard Creeks, Middle Fork Clearwater River, Gedney and Three Links Creeks, Deep Creek, Selway Headwaters, and Upper Selway Canyon ERUs. Species potentially influenced by winter snowmobile use in the subbasins include ungulates and carnivores on winter range, especially bighorn sheep, mountain goats, wolverines, and lynx. Wintering bighorn sheep, mountain goats, and mule deer are concentrated in the upper Selway canyon where Magruder and Paradise Roads are open to snowmobile traffic in winter. Mountain goat and bighorn sheep populations are declining in the Selway subbasin.

Motorized vehicle use on roads and trails that access alpine environments and high elevation denning and calving habitat can potentially impact vulnerable species. In Meadow Creek, North Selway Face, Gedney and Three Links Creeks, Running and Goat Creeks, Moose Creek, Deep Creek, and Selway Headwaters ERUs, roads and trails used by motorized vehicles access alpine environments and disturbance-sensitive species like mountain goats and wolverines. High elevation habitats and species vulnerable in calving and denning periods like lynx, wolves, and elk are accessible to motorized traffic in Meadow Creek, Running and Goat Creeks, North Selway Face, and Gedney and Three Links Creeks ERUs.

All non-wilderness areas in the subbasin are open to motorized vehicle access unless designated closed. With the continued increase in motorized recreational pursuits and associated technological advances in motorized equipment, pro-active access planning to address present and future motorized vehicle use is essential.

Non-Motorized Activities: River recreation may impact harlequin ducks in breeding territories, otters, nesting ospreys, wintering bald eagles and other river-dependent species on the Selway River. Companion dogs not under control can stress or threaten wildlife, with the levels of sensitivity dependent on species and life stage. Humans visiting alpine communities can influence the security of disturbance-sensitive species, including wolverines, grizzly bears, and mountain goats.

Blasting associated with trail maintenance and construction is common in the subbasins and can impact species most during breeding, denning, and nesting periods. Sudden, loud noises have been found to cause bighorn sheep and mountain goats to withdraw to cliffs and marginal habitat.

Residential and Administrative Developments: Private inholdings and other residential and administrative developments in the subbasins influence wildlife and habitats. Human habitation preferences often coincide with important wildlife habitats like winter range, meadows, and riparian areas. Consequences of the human-wildlife interface may include reduced wildlife habitat and security, displacement, harassment or mortality from domestic pets, and direct mortality by humans to prevent depredation and threats to human safety.

Airfields are associated with most private inholdings and administrative sites in the wilderness portion of the Selway subbasin. Most airstrips are accessible all year. Wildlife is most vulnerable to air traffic in winter when additional stress further taps limited energy reserves.

The potential for increased development of private holdings in the subbasins is significant. Additional dwellings, residents, and air traffic would increase impacts to wildlife security in the subbasins.

Hunting and Trapping: Hunting and trapping activities were historically significant in the subbasins and resulted in grizzly bear and wolf extirpation in the late 1800s and early 1900s, and near elimination of mountain lions by 1935. The state paid bounties on wolves, coyotes, bobcats, lynx, and mountain lions as early as 1907.

Take and hunting seasons are regulated today, although because of the remote character of the subbasins and lack of funding, there is little field presence to enforce regulations. Risks associated with hunting and poaching include shooting protected species. Lynx, a listed “threatened” species, can easily be mistaken for bobcat, a species legal to shoot. Wolves, listed “endangered-experimental” are often mistaken for coyotes. Between 1985 and 2000, at least 15 protected grizzly bears were mistakenly shot by hunters during spring black bear season in Montana.

Trapping is now primarily confined to roaded areas and those areas accessible by snowmobiles in winter. When fur prices rise, the risks of trapping lynx in bobcat traps increase, and security of lynx habitat declines with increased access.

Salt Attractants: Unauthorized salt distribution to attract wildlife commonly occurs in the subbasins. The salt can change the distribution pattern of ungulates and make them more

vulnerable to hunting mortality. Salt also attracts other species and increases their potential for being shot or preyed upon at artificial salt lick sites. The unauthorized activity has been associated with both commercial and private hunting operations. The Moose Creek ERU is an example of an area with probable significant influence on elk distribution and vulnerability as a result of salt distribution. The gentle terrain in the East Fork Moose Creek area is easily accessible by pack stock for salt distribution. An artificial lick site in the Whitecap Creek area is located between two mountain goat ranges and is less than a mile from winter and spring range. Goats are easily habituated to salt licks where their vulnerability is increased. Numerous unauthorized salt licks also occur in the Little Clearwater River area within the upper Selway subbasin.

SUBBASIN WILDLIFE RECOMMENDATIONS

The following recommendations generally address subbasin wildlife habitats and focal species. More specific habitat restoration recommendations are discussed in the Landscape Ecology section of this chapter. Recommendations specific to the focal wildlife species in the assessment can be found in Appendix Q.

Restore and Conserve Habitat Integrity

Disturbance Dynamics: Restore more natural disturbance dynamics in the subbasins to provide the habitat diversity, both spatially and temporally, that native species evolved with. In wilderness, restoration of more natural fire regimes is appropriate. Outside wilderness, a combination of carefully planned prescribed fire use and mechanical vegetation removal is recommended to achieve objectives. Implementation of these methods should adequately consider wildlife habitat and population needs. Disturbances should approximate natural distribution, frequency, intensity, and season of occurrence. Spring burning should be avoided when possible to reduce impacts to nesting and breeding wildlife and to gain the forage production benefits of drier season burning. Restoration of disturbance dynamics is necessary to restore and maintain forage in winter range habitats, provide early seral structure including shrublands, conserve old growth habitats by reducing fuels and risks for stand replacing fire, and facilitate seed germination for some species. Fire is important in providing critical dead and dying wood habitat that includes snags and downed wood.

Habitat Connectivity and Fragmentation: Provide for range-wide habitat connectivity and migration routes for carnivores and ungulates. Design timber harvest and other landscape alterations to reflect natural disturbance dynamics in space and time that influence forest structure and patch size, shape, and distribution. Restore fragmented grand fir-Pacific yew habitats in Clear Creek and O'Hara and Goddard Creeks ERUs that are critical moose winter range. Conserve large patches of contiguous western red cedar old forest that provide important habitat for numerous species including cavity nesters and brown creepers. Avoid new road construction in ponderosa pine patches greater than 250 acres to minimize fragmentation in white-headed woodpecker and flammulated owl habitat. Consider formation of a local habitat conservation district on non-federal lands in the Middle Fork Clearwater River subbasin to identify actions that would improve or restore important fragmented habitats, including winter range and the shrub galleries that mountain quail depend on.

Dead and Dying Wood Retention: Implement recommended snag and live tree retention guidelines (Appendix I) to ensure maintenance of habitat integrity for dependent species when planning timber harvests, salvage operations, firewood gathering, and other activities with potential for snag removal. Retain large patches of dead, dying, deformed, leaning, and diseased trees that are important to white-headed woodpeckers, flammulated owls, goshawks, great gray owls, and black-backed woodpeckers. Retain large diameter ponderosa pine by limiting snag harvest to less than 15 inches diameter at breast height, where possible.

Weed Management: Reduce weed populations, conserve existing weed-free areas, and prevent new infestations. Xeric winter range foraging areas are the highest priority and have been

impacted the most. These habitats are important for mountain quail, bald eagles, small mammals, ungulates, and their predators. Bighorn sheep winter range restoration in the upper Selway is a very high priority. Weed management is discussed in more detail in the noxious weeds section of Chapter 4.

Aquatic and Riparian Habitats: Aquatic and riparian habitats in the subbasin are important for numerous terrestrial species, including amphibians, harlequin ducks, bald eagles, ospreys, fishers, and moose. Buffer streams and waterfalls during timber harvest, road and trail construction and maintenance, fire suppression, prescribed fire, and other activities that could result in impacts. Minimize frequency of trail and road stream crossings and, where necessary, bridge streams instead of constructing fords or installing culverts. Prevent contamination of water sources resulting from herbicide and dust abatement applications, fire retardant, fuel spills, and other potential toxicants. Avoid prescribed and slash burns in proximity to riparian habitats. Work with federal Wild and Scenic River Act administrators to address conservation of important wildlife habitat attributes on easement properties, such as bald eagle winter perching and roosting habitat. Recommendations in the Aquatics section of this chapter include additional measures that also benefit terrestrial species in aquatic and riparian habitats.

Restore and Conserve Security

Evaluate impacts of motorized vehicle access and other activities on wintering animals. Significant winter range for bighorn sheep, elk, and mule deer associated with winter snow machine use occurs in the upper Selway area. Address effects on wildlife of Deep Creek Road 468 and Paradise Road 6223. Important elk and mule deer winter range occurs in the lower Selway, Middle Fork Clearwater, and upper Clear Creek and is also associated with winter motorized vehicle use. Address the impacts of Roads 286, 470, Selway Road 223 above O'Hara Creek, Fog Mountain Road 319, Indian Hill Road 9720, Falls Point Road 443, and Swiftwater Road 470. Identify snow machine routes that may increase the vulnerability of lynx, moose, and fishers. Evaluate the impacts of snow machine access to lynx habitats and critical grand fir-Pacific yew moose winter habitats in O'Hara Creek.

Evaluate impacts of motorized vehicle access and other activities in elk calving areas during calving season. Specifically, address upper Meadow Creek, Glover Ridge, Gedney Creek, and Moose Creek Ranches. Implement area closures to confine motorized traffic to designated routes where appropriate.

Review existing motorized vehicle trail and road systems associated with species populations vulnerable to disturbance in alpine elevations. These include mountain goats, which appear to be declining, and wolverines, whose population status is unknown. Priority areas for alpine security evaluation include Meadow Creek, Running Creek, Fog Mountain, and Coolwater Ridge.

Integrate the need to reduce open road and motorized vehicle trail density for wildlife security with watershed restoration efforts and the need to provide an appropriate level of motorized vehicle access. Evaluate high road density areas in Clear Creek, Middle Fork Clearwater River, Meadow Creek, and O'Hara and Goddard Creeks ERUs. Inventory seasonal and year-round motorized vehicle access closures, evaluate effectiveness, and determine existing and potential breaches. Resolve problems with ineffective barriers and develop partnership strategies for effective compliance monitoring and enforcement.

The potential for increased development of private inholdings in the wilderness is significant. An increased in human use with additional residents and air traffic would decrease wilderness wildlife security. Continue pursuing federal acquisition of the properties. Additional dwellings, residents, and traffic will also increase impacts to wildlife security in the lower Selway area outside wilderness. Many authorized homesites remain undeveloped. Consider federal acquisition of these vacant properties as they become available to conserve critical wildlife habitat and security and wild and scenic river integrity.

Avoid permitting motorized boating activity, including jet skis, on occupied bald eagle and harlequin duck streams. This applies to the lower Selway River and possibly Meadow Creek. Evaluate the security of breeding harlequin ducks in association with river recreation activities in the Selway River.

Implement an effective camp and administrative facility sanitation program to prevent habituation of bears and other vulnerable species. Evaluate camp locations and practices, including artificial salt licks, for potential impacts to wildlife. Restore artificial lick sites. The highest priorities are the Whitecap Creek mountain goat winter-spring range and the East Moose Creek elk calving and foraging area.

Develop an information-education strategy for hunters, outfitters and guides, and their clientele that includes identification, status, and ecology of wolves, lynx, and grizzly bears to reduce the potential for misidentification and take of non-target species.

Restore and Conserve Species and Population Integrity

Encourage and support the Idaho Department of Fish and Game objectives to manage the harvest of wilderness species to approximate expected natural age and sex structure and minimize the influence on behavior, in the spirit of wilderness wildlife management objectives.

Support the U. S. Fish and Wildlife Service efforts to reintroduce grizzly bears to the subbasin by assisting with information and education efforts for the public and for agency personnel that include safety and sanitation considerations. Implementation of effective sanitation measures is a very high priority. Restoration of whitebark pine is also a very high priority for habitat restoration.

Refrain from stocking non-native fish species in high lakes and streams where native amphibian populations are at risk. Avoid stocking naturally fishless lakes that may play an important role in maintaining the genetic pool of amphibians in the subbasin. Suppress non-native fish populations, especially brook trout, where risk to native amphibians occurs. The highest priorities are lakes where amphibian populations continue to persist.

Evaluate the feasibility of repatriating mountain quail to native habitat in the subbasins. Maintain or restore the integrity of riparian communities associated with mountain quail habitat. Investigate potential threats from introduced Merriam's turkeys to mountain quail and other native species.

Conduct inventories and establish long-term monitoring efforts for focal species and their habitats. These include old growth dependent species, riparian and aquatic associated species, security dependent species, and wide-ranging species. Rare species and species dependent on limited or degraded habitats are a high priority. Collaboration with other agencies and interested parties is important and will also facilitate evaluation of wide-ranging populations on larger scales.

Investigate migration and range extent of mountain goat, bighorn sheep, and wolverine populations and potential interactions with adjacent populations for more insight into population and habitat threats.

Determine the status of lynx in the extensive suitable habitat that occurs in upper Meadow Creek. Investigate harlequin duck status in Bear Creek and Meadow Creek, where suitable breeding and nesting habitat conditions occur. Develop inventory and monitoring strategies for amphibians, bats, neotropical migrants, and old growth dependent avian species including goshawks, white-headed woodpeckers, flammulated owls, and great gray owls. Develop a conservation strategy to address Coeur d'Alene salamanders and their habitat in the Selway corridor.

Collaborate with the Idaho Department of Fish and Game and the University of Idaho to develop a carrying capacity evaluation model that is responsive to the natural dynamics of habitat availability and corresponding elk population levels in the subbasin. This effort would contribute to better projections of tag allocations and demonstrate the need for restoration of more natural fire regimes and other habitat considerations.

ROADS

SUBBASIN ROADS FINDINGS

Roads in the subbasin reflect two substantively different development and management histories.

In the first category, roads were developed and are used for a variety of purposes including community and private development, timber harvest, and recreation. These types of roads are found in Middle Fork Clearwater River, Clear Creek, and O'Hara and Goddard Creeks ERUs, and to a lesser extent, the Lower Selway Canyon ERU. Despite a variety of uses that drive the development of roads in these ERUs, existing development remains relatively modest, with road density values remaining less than three mi/mi². These ERUs contain the majority of road mileages in the assessment area (around 80 percent).

In the second category, roads were developed and are used primarily for limited access needs. These types of roads are found in Middle and Upper Selway Canyon, North Selway Face, Meadow Creek, Running and Goat Creeks, Selway Headwaters, Deep Creek, Indian Creek, White Cap Creek, and Gedney and Three Links Creeks ERUs. Existing road densities in these ERUs remain below 0.5 mi/mi², several of them substantially so. These roads often are located in a backcountry or wilderness recreation setting. This setting is an important consideration in the management of these routes.

Road systems under Forest Service jurisdiction exhibit restriction levels that can be characterized as moderate to heavily restricted. ERUs with notable levels of miles restricted include Middle Fork Clearwater River, Clear Creek, O'Hara and Goddard Creeks, and Meadow Creek.

Several ERUs may have roads that are excess to the long-term transportation system needs. These are typically ERUs with greater amounts of existing roads including Middle Fork Clearwater River, Clear Creek, and O'Hara and Goddard Creeks ERUs. The tentative identification of roads that may be excess is limited to those under Forest Service jurisdiction.

The costs to maintain and manage the road system are a concern. Maintenance efforts that are deferred have the potential to contribute to resource effects and to limit transportation opportunities. Concerns about maintenance efforts relate especially to the sediment regime and fisheries resources, bridges, access management, travel opportunities, and safety. These concerns exist throughout the road system.

The potential exists to provide improved travel opportunities in the Clear Creek and O'Hara and Goddard Creeks ERUs through adjustment of the access management plan.

SUBBASIN ROADS RECOMMENDATIONS

The maintenance and management of roads that provide backcountry access should receive continued attention. Deferred maintenance on Road 317 accessing Coolwater Ridge should be addressed to reduce environmental impact and to preserve the access to this high elevation ridgeline. Continued maintenance on Road 285 accessing Green Mountain and Elk Mountain, commensurate with the capabilities of high clearance vehicles, is appropriate. Because Road 285 provides access to several trailheads, the needs of vehicles towing trailers should be accommodated. Road 468 should continue to accommodate the backcountry driving experience, allowing motorists to visit the Magruder corridor. Maintenance of the section of this road in the Deep Creek drainage should strive to minimize potential for surface erosion while accommodating the recreation need.

A reconfiguration or repatterning of the transportation system should be evaluated in the Clear Creek and O'Hara and Goddard Creeks ERUs, and possibly in the Middle Fork Clearwater River ERU. This reconfiguration should be based upon both watershed analysis and roads analysis recommendations. Reductions in overall road mileages through road decommissioning and utilization of ephemeral roads concepts should be incorporated in these ERUs. Consideration should also be given to reducing the amount of travel restrictions in these ERUs. Particular

consideration should be given to increasing recreation opportunity on through routes such as Roads 286 and 1855 in the Clear Creek area and Road 1119 in the Goddard Creek area.

Throughout the subbasins road management and maintenance need to provide for user safety and watershed protection. Overall, the road system should reflect the minimum system needed to provide for administration and use of the national forest. Once this minimum system is identified, it is important that maintenance be kept current. Roadway brushing, surface maintenance, drainage maintenance, travel way width maintenance, and signing are all very important considerations for safe travel. Drainage maintenance, including provisions for fish passage, surface maintenance, and roadside vegetation management should be highlighted to provide watershed protection.

RECREATION, WILDERNESS, AND TRAILS

SUBBASIN RECREATION, WILDERNESS, AND TRAILS FINDINGS

Recreation

Diverse recreation opportunities available within the Selway and Middle Fork Clearwater subbasins attract increasing numbers of visitors, especially those who travel by motor vehicle. Motorists, recreational vehicle users, bicyclists and campers enjoy dispersed and developed sites along the Selway and Middle Fork Clearwater Wild and Scenic Rivers, along the Magruder, Fog Mountain, Elk Summit and Coolwater Roads, and in the canyons of the Bitterroot Mountains to the east. From portals along these routes, hikers and stock users can also access the Selway-Bitterroot or Frank Church-River of No Return Wildernesses. Shearer and Moose Creek Airfields, unique because they lie within the wilderness, are portals for pilots, hunters, fishing enthusiasts, and hikers. Anglers fish in high-elevation streams and mountain lakes in the summer months, and in lower elevation waters nearly year-round. Big game hunting by outfitters and private parties dominates fall recreational activities; snowmobiling, some hiking, and cross-country skiing are becoming very popular winter activities. Summer use includes swimming, boating and floating on the Selway and Middle Fork Clearwater Rivers, wildlife viewing, fishing, climbing, photography, hiking, and OHV (off-highway vehicle) use.

Observations and encounters indicate that visitor use in the Selway and Middle Fork Clearwater subbasins is increasing in more easily accessible areas and within about five miles of trailheads. The areas along the east slopes of the Bitterroot Range, the Selway River corridor, and the Magruder corridor receive intensive day and weekend use because of proximity to populated areas and accessibility. The interior of the area receives light use. Outfitting and guiding activities account for the major portion of recreational use, especially in the fall hunting season. Outfitters and guides report numbers of clients and use days; the Idaho Department of Fish and Game hunting and fishing licenses reflect use by hunters and anglers; and a float-season permit system accounts for use on the Selway River from May 15 to August 1. Otherwise, total visitor use cannot accurately be reflected because no general permit is in place, and registration is voluntary. Registration cards are sometimes available at trailheads, and in remote locations they are not systematically collected. Many visitors do not complete registration cards.

OHV users express the desire for more access to the subbasin. Increasing numbers of machines are encountered on roads and trails and motorized vehicle use has increased by an estimated 50 percent in the last ten years. Advanced technology has increased the potential for snowmobiles and other OHVs to access areas where it was impossible 2 to 5 years ago. Encroachment on wilderness areas and wildlife security could be issues associated with increased use of OHVs. Many floating enthusiasts advocate revision of the existing float permit system on the Selway River that would allow more than one launch per day. Hunting activity is declining, probably due to the allotment of tags by the Idaho Department of Fish and Game and declining populations of elk. Traditional outfitters and guides seek to offer more diverse activities, especially summer fishing trips, to attract clients.

The Lewis and Clark bicentennial observance has the potential to increase visitor use and recreational activity in the subbasins over the next 3 to 5 years. It is not possible to accurately project the numbers of visitors or impacts, though based on responses to visitor inquiries and the Oregon Trail Centennial visitor numbers, some agency sources predict as many as four million people will visit the area.

Wilderness

About 72 percent of the Selway and Middle Fork Clearwater subbasins is designated wilderness, including 978,000 acres of the Selway-Bitterroot Wilderness and 117,040 acres of the Frank Church-River of No Return Wilderness.

The Selway-Bitterroot Wilderness: An agency coordination team provides leadership and facilitates consistency among the seven districts and four forests included in the Selway-Bitterroot Wilderness (SBW). A wilderness coordinator and a Citizens' Task Force were in place until 1996 to assist in planning and implementing SBW management direction that would be amended to each forest plan. Before the plan was complete, the task group and the coordinator position were discontinued. In the SBW, a prevention of significant deterioration approach is applied to the management of the area. To reach the desired future condition, the LAC (limits of acceptable change) process defines indicators for resource, social and managerial settings to measure trends, and how social impacts affect ecological and natural processes. LAC provides for inventory and monitoring of wilderness trails and campsites. Those areas of the wilderness that do not meet forest plan and LAC standards are reported in the annual *State of the Wilderness* (SOW). About 132 campsites and trails throughout the SBW portion of the assessment area are currently classified as out-of-standard or identified as problem areas. The number of out-of-standard or problem areas reported does not necessarily accurately reflect existing conditions, because budget constraints prevent fielding an adequate work force to systematically inventory and monitor all campsites and trails. Some sites may be recovering and other non-inventoried or new sites might exist. Visitor contacts for education and opportunities for rehabilitation of out-of-standard sites are minimal.

The Frank Church-River of No Return Wilderness: In the Frank Church-River of No Return Wilderness, the recreation opportunity spectrum (ROS) characterization of primitive experience, setting and activity apply to wilderness recreation. Some high-use areas exceed visitor expectations for levels of encounters and human impacts. Understory vegetation loss and soil compaction are the most prevalent types of damage. The Frank Church-River of No Return Wilderness staff is working toward development of a management plan that would define standards and indicators for trail and campsite conditions.

The National Wilderness Agenda 2000: Traditionally, recreation, outfitter guide programs, and trails have defined the wilderness program, rather than the status of wilderness components such as soil, water, vegetation, fish, wildlife and rare plants. [A Forest Service Chief's Advisory Group was appointed in 1999 to develop strategies to meet the broad goals of the *Interagency Wilderness Strategic Plan* of 1995. In 2000, the Advisory Group's strategies were compiled in a document called *Contemporary Agenda for an Enduring Resource of Wilderness: Thinking Like a Mountain*. That document was revised and titled *The National Wilderness Agenda 2000 (Thinking Like a Mountain)*. It contains an expanded Forest Service *Vision for Wilderness* and emphasizes six major foci for improving overall ability to care for wilderness: (1) outreach, education and training; (2) wilderness inventory and monitoring; (3) information management; (4) priority resource issues; (5) program management and coordination; and (6) leadership.

Trails

About 1,200 miles of trail are on the inventory today, considerably fewer than in the past when large sums of money were appropriated specifically for trails that were often associated with fire and timber. Of the inventoried miles, crews are able to give attention to about 15 percent each year. According to the current forest plan, priority for trail maintenance is drainage, erosion control, and safety, but crews are not sufficient to accomplish that goal. The focus is on level I

maintenance to clear the trail of logs so that visitors can pass. Miles of trails do not get the level of attention required by Forest Service policy because of budget limitations. Area visitor maps are deceiving and indicate many trails are available as secondary trails and maintained as prescribed, but budget resources cannot provide for maintenance other than on mainline routes. The Meaningful Measures/Infra process, currently underway, provides for inventory of miles and condition of the entire trail system by 2003.

SUBBASIN RECREATION, WILDERNESS, AND TRAILS RECOMMENDATIONS

Recreation

- Monitor activity, as use of OHVs continues to increase, considering encroachment upon wilderness areas, security to wildlife and vegetation, and potential conflicts with other users.
- Communicate with user groups openly, focus on education, and encourage self-monitoring.
- Consider reconfiguration of appropriate road and trails to accommodate motorized use.
- Establish a registration system or no-fee permit system at appropriate portals to more accurately interpret use and trends. It is necessary to increase inventory and monitoring of high-use areas and areas with potential for increased recreational use to determine problem areas and establish a basis for management decisions.
- Participate with interest groups and individuals to facilitate education and awareness and encourage self-monitoring within organized recreation groups.
- Maintain the present one-launch-per-day float permit on the Selway Wild and Scenic River and monitor increasing use and trends in the shoulder seasons.
- Develop a roaded access plan for recreation use on the river corridors and along Deep Creek.

Wilderness

- Implement a systematic and thorough inventory and monitoring program in the Selway-Bitterroot Wilderness. The information should be organized in a wilderness-wide database and utilized by management so that problem areas and out-of standard sites and trails are addressed. Rehabilitate those areas.
- In the Frank Church-River of No Return Wilderness, implement wilderness-wide standards and indicators for campsites and trails necessary to manage toward meeting the desired future conditions for ROS classifications. Outline the priorities for providing access, trail classification, and maintenance. (A management plan is being developed as of this writing.)
- Reinststate a planning group (formerly titled LAC Citizens' Task Force) for the Selway-Bitterroot Wilderness, in cooperation with managers, specialists and researchers, in order to gain citizens' perspectives and knowledge.
- Consider an agency position dedicated to coordination of wilderness management.
- The *Selway-Bitterroot Wilderness Management Direction* and subsequent updates were amended to forest plans; however, the *SBWMD* was not completed as intended by the original planning group. Resume that project to include special uses, expand on other incomplete sections, and respond to the dynamics of wilderness management.

CULTURAL AND HERITAGE RESOURCES

- Use The Wilderness Act of 1964, and the strategies outlined in the *National Wilderness Agenda, 2000 (Thinking Like a Mountain)* as the foundation for wilderness programs and wilderness management decisions.

Trails

- Use Meaningful Measures/Infra data to develop major trail construction and maintenance plans, with emphasis on meeting standards as indicated by forest plans, inside and outside the wilderness.
- Analyze use patterns and determine classification of each trail (mainline, secondary, way) and level of maintenance required. Determine what trails will be removed from the trail system, adjust visitor maps and install appropriate signing.
- Provide handicapped access where possible.

CULTURAL AND HERITAGE RESOURCES

SUBBASIN CULTURAL HERITAGE FINDINGS

A large number of previously documented cultural resource properties (CRPs) exist within the assessment area. The numbers of prehistoric (Native American) and historic sites distributed throughout the subbasins are about equal. The prehistoric sites provide evidence about ways early inhabitants utilized the numerous resources available through time and in various locations in this region. Many of the historic cultural resource properties are Forest Service-related. These sites illustrate the extent to which the subbasin was developed in order to manage the landscape. Many of the sites in the assessment area are eligible for listing in the National Register of Historic Places, which indicates they hold special significance and are protected in order to preserve the unique locations where specific activities took place.

SUBBASIN CULTURAL HERITAGE RECOMMENDATIONS

The ultimate desired condition regarding the known cultural resource sites would preserve and protect all sites for future generations. These sites contain an unknown amount of information that could be significant to the history of the development of the area. Additional fieldwork in the assessment area, including various analytical techniques (core sampling, pollen analysis, radiocarbon dating, fire history studies, geology surveys, wildlife information, etc.) could reveal important information. Additional archaeological surveys and subsurface excavation projects within the assessment area need to be conducted in order to fully understand and document the past uses of the area by prehistoric as well as historic occupants. Excavations can help provide data. Surveys would address how proposed management actions would impact known cultural resource properties and would contain recommendations for ways to preserve and protect the known sites from disturbance or destruction.

Increased recreational use within the subbasin has the potential to negatively effect cultural resource protection. To mitigate this potential effect, public education should be increased. Within the river corridor where rafting is permitted, information about the sensitive nature of the area's fragile cultural resources should be included. Similar information should be made available at other areas as well, such as trailhead registration boxes, campgrounds, and the administrative sites.

There are numerous opportunities to interpret the Selway and Middle Fork Clearwater assessment area to the public. An educational effort would help ensure the past is not forgotten, and make people aware that much can be learned from studying the events that took place in this unique environmental setting within the Nez Perce National Forest. This public education would serve to mitigate effects on cultural resources by the public, who may otherwise unknowingly be degrading significant resources.

Very little is known regarding the Native American use of the upper and middle segments of the Selway canyon. The upper canyon contains what may be the oldest village known to the Nez Perce. This site is being impacted by erosion on an annual basis. Sample excavations and subsequent analyses should be performed before more of the site is lost. The resultant analysis would benefit many resource areas (wildlife, fisheries, botany, hydrology, etc.).

Much is known about the lower Selway subbasin (in comparison to the middle and upper portions) because this area is roaded and non-wilderness. Archaeologists have reviewed many forest projects to determine project effects on known cultural resource sites. Additional archaeological inventories are needed in the middle and upper portions of the Selway subbasin. These surveys should be broad-scale and should include the river canyon as well as upland settings. These findings would then be incorporated into the *Selway River Historic Preservation Plan*, which will allow for better management of the cultural resources within the subbasin.

COMPARISON OF SUBBASIN ASSESSMENT FINDINGS TO BROAD-SCALE FINDINGS FROM ICRB

The *Interior Columbia River Basin Assessment* contains evaluations of conditions and trends for 144.2 million acres in the interior Columbia River basin. The general findings of the *ICRB Assessment* are displayed below (following the bullets) for the following resources: forests and rangelands; hydrology and watershed processes; source wildlife habitat; streams, rivers and lakes; riparian areas and wetlands; fish; air quality; human uses and values; and American Indian rights and interests (*ICBEMP Ecosystem Review at the Subbasin Scale*, 1999). An explanation of how the interior Columbia River basin finding compares to conditions within the Selway and Middle Fork subbasins follows each general finding from the *ICRB Assessment*.

FORESTS AND RANGELANDS

- Interior ponderosa pine has decreased across its range with a significant decrease in old single story structure. The primary transitions were to interior Douglas-fir and grand fir-white fir.
This finding is consistent with conditions and trends found within the Selway and Middle Fork Clearwater subbasins.
- There has been a loss of the large tree component (live and dead) within roaded and harvested areas. This decrease affects terrestrial wildlife species that are closely associated with these old forest structures. Western larch has decreased across its range. The primary transitions were to interior Douglas-fir, lodgepole pine, or grand fir and white fir.
This is true for the ridges and lower relief roaded areas within the roaded and harvested portions of the assessment area. In steep canyon settings, the combined effects of fire suppression and poor timber access have resulted in a stable or increasing proportion of the large tree component.
Loss of old, open ponderosa pine and Douglas-fir forests in the developed portion of the subbasin has decreased habitat for white-headed woodpeckers and flammulated owls.
- Western white pine has decreased by 95 percent across its range. The primary transitions were to grand fir and white fir, western larch, and shrub-herb-tree regeneration.
This is true of the assessment area, although western white pine was seldom an important component. Grand fir, Douglas-fir and western red cedar have generally replaced it.

- The whitebark pine-alpine larch potential vegetation type has decreased by 95 percent across its range, primarily through a transition into whitebark pine cover type. Overall, however, the whitebark pine cover stand has also decreased, with compensating increase in Engelmann spruce and subalpine fir.
Whitebark pine has decreased precipitously in the assessment area. Alpine larch is thought to have declined, as well, due to fire suppression. Engelmann spruce and subalpine fir have replaced these species in some areas. Other areas have reverted to alpine scrub.
- Generally, mid-seral forest structures have increased in dry and moist forest potential vegetation groups, with loss of large, scattered, and residual shade-intolerant tree components, and an increase in the density of shade-tolerant smaller diameter trees.
This has been an important change in the assessment area.
- There has been an increase in fragmentation and a loss of connectivity within and between blocks of late seral, old forests, especially in lower elevation forests and riparian areas. This has isolated some animal habitat and populations and reduces the ability of populations to move across the landscape, resulting in long-term loss of genetic interchange.
This has occurred primarily in low elevation dry and moist forests, on gentle terrain where harvest has been extensive.
The most significant fragmentation of animal habitats is associated with agricultural and residential development of the private lands and road construction and timber harvest on federal lands in the lower portion of the subbasin. However, most of the subbasin is undeveloped and habitat connectivity and genetic interchange remain intact in these areas.
- Habitat for several carnivores and omnivores is in decline.
The significant loss of whitebark pine and native salmon runs has decreased grizzly bear habitat quality in the assessment area. Habitat for ungulate prey species has declined due to restriction of early seral habitat distribution and patch size, some reduction in shrubland extent, and loss of recent burn patches as a result of fire suppression. Extensive weed infestations throughout the subbasin and agricultural and residential development in the lower subbasin have also contributed to the decline in winter range quality and security for carnivores and their prey. Fragmentation of old mesic forests due to road construction and timber harvest in the lower subbasin has impacted lynx denning habitat. However, old forest habitat extent has generally increased due to fire suppression throughout the remainder of the subbasin.
- Insects and disease always existed in forests, but the size and intensity of their attacks has increased in recent years due to increased stand density.
The susceptibility to insect and disease of lower elevation dry forests has increased with increasing stand density and shift toward more susceptible Douglas-fir and grand fir. The susceptibility of lodgepole pine and whitebark pine to mountain pine beetle has increased with the extent of stands in older age classes. Increasing dominance of Douglas-fir and true firs has increased the extent of forests susceptible to root diseases.
- Dry forests have had an increase in fuel loadings, duff depth, stand density, and a fuel ladder that can carry fire from the surface into the tree crowns. As a result wildfire intensity has increased.
The change in fuel characteristics appears to have occurred, based on departures in fire intervals and stand structure. There is not enough evidence to conclude that

SOURCE WILDLIFE HABITAT

wildfire intensity has increased, although anecdotal evidence exists for high mortality of large ponderosa pine in ground fires.

- Noxious weeds are spreading rapidly, and in some cases exponentially, in most dry forest types.

This finding is born out by this assessment, particularly where vectors for invasive plants exist, such as trails or roads.

- Cheatgrass has taken over many dry shrublands, increasing soil erosion and fire frequency and reducing biodiversity and wildlife habitat. Cheatgrass and other exotic plant infestations have simplified species composition, reduced biodiversity, changed species interactions and forage availability, and reduced the systems' ability to buffer against changes.

Dry shrubland potential vegetation groups are rare in the assessment area, but cheatgrass has invaded areas of low elevation foothills grassland with similar effects.

Weed infestations in xeric habitats have reduced the quality of ungulate winter range forage and have contributed to loss of native mountain quail habitat.

- Expansion of agricultural and urban areas on non-federal lands has reduced the extent of some rangeland potential vegetation groups, most notably dry grasslands, dry shrublands, and riparian areas. Changes in some of the remaining habitat patches and loss of native species diversity have contributed to a number of wildlife declines, some to the point of special concern (such as Columbian sharp-tailed grouse).

The foothills grassland-shrub steppe of the lower elevations has been similarly affected by agricultural and residential development.

Agricultural and residential development of xeric habitats has contributed to loss of native mountain quail in the Middle Fork Clearwater River and Clear Creek ERUs.

- Fire frequency has increased in some areas, particularly in drier locations where exotic annual grasses have become established. Increased fire frequency has caused a loss of shrubs and reduction in bunchgrasses.

There is not good evidence for this finding. Heavy grazing and fire suppression may have resulted in relatively little change in fire frequency in areas dominated by exotic annual grasses.

SOURCE WILDLIFE HABITAT

- Source habitats for the majority of species in the Columbia River basin declined strongly (>20 percent) from historical to current conditions.

Source habitats in the subbasin have probably not declined as sharply as those in the broader context of the Columbia River basin, although departures from historic conditions are significant in some parameters and locations.

- The strongest declines were for species dependent on low-elevation, old-forest habitats, species dependent on combinations of rangeland or early seral forests with late seral forests, and species dependent on native grassland and open canopy sagebrush habitats.

These CRB findings are generally consistent with subbasin findings, although the loss of whitebark pine habitat is also significant. In the absence of historic and current species population data, changes in source habitats suggest probable changes in dependent populations. Open old ponderosa pine habitats have declined significantly. Early seral habitat has increased in extent but is more limited in distribution and patch size relative to historic condition. Roads and timber harvest have fragmented mesic old growth in the developed portion of the subbasin. Weed

infestations have significantly reduced native grass forage and habitat for mountain quail.

- Primary causes of decline in old-forest habitats and early-seral habitats are intensive timber harvest and large-scale fire exclusion.

These findings are consistent with subbasin findings. Most of the subbasin is undeveloped but has been impacted significantly by fire suppression throughout. Effects of timber harvest are significant in localized areas but are restricted to the developed portion of the lower subbasin.

- Primary causes for decline in native herbland, woodland, grassland, and sagebrush habitats are excessive livestock grazing, invasion of exotic plants, and conversion of land to agriculture, residential, and urban development. Altered fire regimes have also contributed to a decline in grassland and shrubland habitats.

Livestock grazing is no longer an important influence in the federal portion of the subbasin, although sheep grazing was intensive historically in localized areas. However, private lands in the lower subbasin are significantly altered by livestock grazing and land conversion with associated invasions of exotic plants. The absence of fire has moderately decreased shrubland habitats in the subbasin.

- A variety of road-associated factors negatively affect habitats or populations of many species.

Most of the subbasin is unroaded but this finding is consistent with conditions in the developed portion of the subbasin. Where roads access alpine environments and winter range in more remote locations, potential impacts to vulnerable species are also important.

- Human interactions with wide-ranging carnivores are generally negative and large areas of the Columbia River basin may not be used by wide-ranging carnivores because of this. Habitats for many riparian dependent terrestrial species, especially shrubland habitats have declined.

More extensive development in the lower subbasin has increased human interactions with wide-ranging carnivores. Most of the subbasin, however, is remote and human interactions are primarily associated with hunting and habituation to camps and administrative facilities. Snowmobile access to remote, high elevation habitats may negatively influence lynx in localized areas. Decline in riparian habitat is primarily associated with roads and land conversion in the developed portion of the subbasin. In high lakes environments declines in amphibian populations are associated with the introduction of non-native fish species.

- Snag and down wood habitats in managed forested and riparian areas have declined.

Snag production and dead wood recruitment in the subbasin has declined due to fire suppression. Timber harvest in the developed portion of the subbasin has also reduced snag and down wood habitat in localized areas.

HYDROLOGY AND WATERSHED

- Management activities throughout the watersheds in the ICRB project area have affected the quantity and quality of water and processes of sedimentation and erosion, thus affecting hydrologic conditions.

The ICRB Science Assessment rated each subbasin within each ICRB ERU for hydrologic disturbance, hydrologic integrity and hydrologic potential for recovery. The finding of this landscape assessment indicate the ratings given for the Selway and Middle Fork Clearwater River subbasins were in error. The table below compares these ratings and discussion of the differences follows the table.

Table 2.1: Comparison of ICRB Ratings and Subbasin Ratings for Hydrologic Character within the Subbasin¹

	Middle Fork Clearwater	Lower Selway	Upper Selway
Hydrologic Disturbance Condition	High (Moderate)	Low (Moderate)	Low
Hydrologic Recovery Potential	Low (Moderate)	High	High
Hydrologic Integrity	Low (Moderate)	High	High

¹ Suggested amendments to the ICRB ratings, based on this assessment, are shown in parentheses.

Middle Fork Clearwater Subbasin Hydrologic Rating Departure from ICRB Findings

Hydrologic disturbance: Hydrologic disturbance in the subbasins within the Central Idaho Mountains (an ecological reporting unit within the ICRB) were rated for four disturbance factors: road construction, surficial mining, dams, and cropland conversion. The Middle Fork Clearwater River is rated high for hydrologic disturbance. Findings from this subbasin assessment would give the Middle Fork Clearwater subbasin a moderate rating for hydrologic disturbance, instead of a high rating.

Hydrologic recovery potential: The Middle Fork Clearwater, considered as a whole, should have a moderate rating for hydrologic recovery potential. If road density is reduced, natural disturbance regimes such as fire are restored where possible, timber harvest entries timed to let stands recover, road encroachment reduced, and impact of residential development slowed, the Middle Fork has potential for moderate recovery from past hydrologic disturbance.

Hydrologic integrity: The hydrologic integrity rating using ICRB was rated as low. Due to the findings in this subbasin assessment, the rating should be moderate.

Recommended Change: The disturbance having the most effect on the Middle Fork Clearwater watersheds is roads. In general using the ICRB ratings, the Middle Fork watersheds have a high road density rating, with a few 6th code HUC watersheds having a very high rating. The high road densities are concentrated where timber harvest has taken place or in residential areas. Two other disturbance activities not discussed in the ICRB are timber harvest and fire suppression. These activities in combination with roads have produced a change from the historical hydrologic processes and streamflow regimes. There has been a change to press disturbances that have disrupted natural sediment processes and streamflow regimes (water yield). This includes chronic sediment in streams and repeated frequent harvest entries into watersheds, which disrupts water yield and natural streamflow regimes. Within the 5th and 6th code HUC watersheds tributary to the Middle Fork Clearwater River, timber harvest and road construction have had a large effect on the potential for the watersheds to recover, but this is true of only a few small 6th code HUC watersheds. Clear Creek is the only large watershed with moderate to high disturbance.

Selway Subbasin Hydrologic Rating Departure from ICRB Findings

Hydrologic integrity: Within the Selway subbasin analysis, findings show that the high hydrologic integrity for the upper Selway rating from ICRB findings agrees with

the findings in this assessment. The rating for the lower Selway is also considered a correct rating except for the O'Hara and Goddard Creeks ERU, and this is such a small part of the area within the subbasin, the integrity rating should still be considered high.

Hydrologic disturbance: *The high rating should be used with the recognition that the south half of the lower Selway subbasin would have a moderate rating for hydrologic disturbance, instead of low. This is due to high road densities and timber harvest levels, which have produced some level of chronic sediment and changes in streamflow regimes. The hydrologic recovery potential for the subbasin should remain high with a continued emphasis on recovery in the south half of the lower Selway.*

STREAMS, RIVERS, AND LAKES

- Banks and beds of streams, rivers, and lakes have been altered. In general, the changes have been greatest for the larger streams, rivers, and lakes.

The above statement is not a main issue in the Selway and Middle Fork Clearwater subbasins. Roads are located adjacent to the Middle Fork Clearwater River and portions of the Selway River. Highway 12 along the Middle Fork Clearwater River, Forest Service Roads 6223 (Paradise), 468 (Deep Creek) and Selway River Road have had a low to moderate effect on the bed and bank of the river. In the wilderness and roadless portions of the Selway subbasin, there are no effects from roads. This differs from other subbasins where bed and banks have been highly altered on major rivers. A few reaches of streams have been impacted by road encroachment in the lower Selway subbasin on O'Hara Creek, and in the Middle Fork Clearwater River ERU on the lower reaches of Clear Creek. But unlike other subbasins in the ICRB analysis area, much of the Selway-Middle Fork Clearwater assessment area is wilderness and roadless, and has a low level of management. Impacted lakes are alpine lakes, and because much of the assessment area is wilderness the lakes receive low to moderate impacts from users' activities in lakeshore areas.

- Many Forest Service and Bureau of Land Management administered streams are "water quality limited" as defined by the Clean Water Act. On Forest Service-administered lands, the primary water quality problems are sedimentation, turbidity, flow alteration, and elevated temperatures.

Streams listed as "water quality limited" within the Selway and Middle Fork Clearwater subbasins are listed for sediment concerns and they are a low priority for the state listing. On the lower Selway, the listed streams are currently being analyzed using the State of Idaho Department of Environmental Quality Subbasin Assessment Analysis process. Preliminary results show sediment is not a pollutant of high concern for most Selway streams. This is only preliminary data. This analysis has not been conducted by DEQ for the Middle Fork Clearwater "water quality limited" streams. In general, streams in the Selway and Middle Fork Clearwater subbasins are probably less impaired by sediment, flow alteration and elevated temperatures than stated above, and in general are closer to historic condition in the Selway subbasin, especially in wilderness and roadless areas where conditions have not been altered by human intervention.

- Streams and rivers are highly variable across the ICRB project area, reflecting diverse physical settings and disturbance histories. Nevertheless, important aspects of fish habitat, such as pool frequency and large woody debris abundance, have decreased throughout much of the ICRB project area.

This finding is consistent with the findings of this subbasin assessment in terms of the variability of streams and lakes and disturbance histories across the analysis area. The changes in fish habitat documented in the ICRB are not entirely consistent, however. Although there are specific areas where important aspects of fish habitat

have changed or decreased, at the context of the entire assessment area, the existing condition of fish habitat is similar to the historic condition.

RIPARIAN AREAS AND WETLANDS

- The overall extent and continuity of riparian areas and wetlands has decreased.
The overall extent and continuity of riparian and wetlands has decreased the most in a few Middle Fork Clearwater face watersheds, Clear Creek, the O'Hara and Goddard Creeks ERU, and along Deep Creek. The roadless area and large wilderness area differ from the general findings as stated above for ICRB. The overall extent and continuity of riparian areas and streams is unchanged from the historic condition in wilderness and roadless areas.
- Riparian ecosystem function, determined by the amount and type of vegetation cover, has decreased in most subbasins within the ICRB project area.
This statement is somewhat true in some watersheds in the Middle Fork Clearwater subbasin and the south side of the Lower Selway River. There has been a decrease in historic function of riparian zones in reaches in a few managed watersheds, mostly due to roads in lower stream reaches. In general, the subbasin contains large contiguous areas of undisturbed riparian vegetation that is near natural condition. In a few areas, change from historic conditions has occurred, similarly to that found within the ICRB project area, but in large areas, riparian vegetation is undisturbed and remains close to the historic condition.
- A majority of riparian areas on Forest Service and BLM-administered lands are either "not meeting objectives," "non-functioning," or "functioning at risk." However, the rate has slowed and few areas show increases in riparian cover and large trees.
This assessment supports the above findings in localized areas within the roaded and harvested portions of the assessment area. Watershed restoration efforts have helped with watershed and stream function; these include riparian road removal, planting in riparian zones, implementation of PACFISH (Pacific Anadromous Fish Strategy) buffer strips, and a decrease in timber harvest.
- Riparian areas are important for about three-quarters of the terrestrial wildlife species. Wildlife numbers have declined in proportion to the decline in riparian habitat conditions.
These findings are partially consistent with subbasin findings. Riparian areas are also important for most of the terrestrial wildlife species in the subbasin. Data for historic and current population levels is unavailable. Riparian habitat integrity throughout most of the undeveloped portion of the subbasin remains high and presumably supports species populations that approximate historic levels. Fire suppression may have affected riparian habitats for disturbance-dependent species.

FISH

- The composition, distribution, and status of fisheries within the planning area are substantially different than they were historically. Some native fishes have been eliminated from large portions of their historical ranges.
This finding is not entirely consistent with the findings of this planning unit assessment. The existing composition, distribution, and status of fisheries within the planning area are not substantially different from the historic condition, with several exceptions. These include a lower abundance of anadromous fish, extirpation of some local subpopulations of westslope cutthroat trout from encroachment of non-native species, and possible loss of local adaptation in some cutthroat trout populations from introgression with introduced hatchery fish.

AIR QUALITY

- Many native non-game fish are vulnerable because of their restricted distribution or fragile or unique habitats.

This finding is probably not consistent with the findings of the assessment. Information concerning the status of non-salmonid fishes is limited in the Selway and Middle Fork Clearwater subbasins, but it is believed that their distribution and access to fragile or unique habitats is similar to the historic condition.

- Although several of the key salmonids are still broadly distributed (notably the cutthroat trout and redband trout), declines in abundance, loss of life history patterns, local extinctions, and fragmentation and isolation in smaller blocks of high quality habitat are apparent.

This finding is not entirely consistent with the findings in the assessment area. The Selway subbasin maintains large blocks of interconnected, high quality habitat. Not only are salmonids broadly distributed across the subbasin, resident, fluvial, and anadromous life history strategies are evident throughout. Abundance of westslope cutthroat, steelhead/redband, and bull trout is locally high in many areas. Significant fluvial populations of westslope cutthroat trout and bull trout continue to exist in both mainstem rivers. Abundance of spring chinook salmon, however, has declined precipitously from historic levels.

- Wild chinook salmon and steelhead are near extinction in a major part of their remaining distribution.

This finding is consistent with findings in the assessment for wild chinook salmon, but probably not for steelhead. Abundance of chinook salmon varies widely by year but is generally very low. Hatchery supplementation of the Selway population also occurs. Steelhead trout in the Selway and Middle Fork Clearwater subbasins are not at immediate risk of extinction, although abundance varies annually and has been in a declining trend for decades.

- Core areas for rebuilding and maintaining biological diversity associated with native fishes still exist within the Columbia River basin.

This finding is consistent with the findings in the assessment area. The Selway subbasin in particular is considered an important core area for recovery of fishes in the Columbia River basin. Numerous 5th and 6th code HUCs exist within the Selway subbasin that serve as important core areas both within and outside the planning area.

AIR QUALITY

- The current condition of air quality in the ICRB project area is considered good, relative to other areas of the country.

This is true for the assessment area. Periods of diminished air quality are probably less frequent and of smaller duration than in presettlement times, when more frequent fires occurred.

- Wildfires significantly affect the air resources. Current wildfires produce higher levels of smoke emissions than historically. Within the ICRB project area, the current trend in prescribed fire use is expected to result in an increase of smoke emissions.

This is true for the assessment area. Increased use of prescribed fire and wildland fire for resource benefits can be expected to increase smoke emissions compared to the period of fire suppression, but they will still be less than presettlement times, and potentially less than with severe wildfires that may occur within a general policy of suppression.

HUMAN USES AND VALUES

- The planning area is sparsely populated and rural, especially in areas with a large amount of agency lands. Some rural areas are experiencing rapid population growth, especially those areas offering high quality recreation and scenery.

This finding is consistent with the planning unit assessment area. There are no incorporated communities within the assessment area, but population growth is increasing at a moderate rate on rural lands and in the communities situated on the perimeters of the subbasin. The Selway and Middle Fork Clearwater Rivers attract increasing numbers of residents. Population growth is occurring most rapidly in the Bitterroot Valley in Montana, the area adjacent to the Selway subbasin on the east.

- Development for growing human population is encroaching on previously undeveloped areas adjacent to lands administered by the Forest Service and Bureau of Land Management. New development can put stress on the political and physical infrastructure of rural communities, diminish habitat for some wildlife, and increase agency costs to manage fire to protect people and structures.

This finding is consistent with the planning unit assessment area.

- Recreation is an important use of agency lands in the planning area in terms of economic value and amount of use. Most recreation use is tied to roads and accessible water bodies, though primitive and semi-primitive recreation is also important and becoming scarce relative to growing demand.

This finding is consistent with the planning unit assessment area, although primitive and semi-primitive recreation is not growing scarce. Seventy-two percent of the assessment area is roadless or wilderness and offers vast opportunities for primitive recreation experiences. However, most recreational use is concentrated in the areas that are easily accessed by roads, especially in the canyons to the east of the assessment area that are portals to wilderness. Outfitting, guiding, and river recreation contributes appreciably to local economic well being and diversity.

- Industries customarily served by agency land uses, such as logging, wood products manufacturing and livestock grazing, no longer dictate economic prosperity of the region, but remain economically and culturally important in rural areas. The economic dependence of communities on these industries is highest in areas that are geographically isolated and offer few alternative employment opportunities.

This finding is consistent with the findings of this assessment.

- The public has invested substantial land and capital to develop road systems on agency lands, primarily to serve commodity uses. On forestlands, commercial timber harvest has financed 90 percent of the construction costs and 70 percent of maintenance costs. Recreation now accounts for 60 percent of the use. Trends in timber harvest and new road management objectives make the cost of managing these road systems an issue of concern.

This finding is partially consistent with the findings of the planning unit assessment and is applicable in the western portions of the subbasin. The cost of managing these road systems remains an issue of concern. For most of the assessment area, however, existing access was not financed by commercial timber harvest. While anecdotal evidence indicates that recreation use now accounts for well over 60 percent of use, there is no system in place for accurately monitoring all recreation use.

AMERICAN INDIAN RIGHTS AND INTERESTS

- For those counties that have benefited from federal sharing of gross receipts from commodity sales on agency lands, changing levels of commodity outputs can affect county budgets.

This finding is consistent for the assessment area. Both Idaho and Ravalli Counties benefited significantly from higher levels of commodity output in the past. A steady rise in the services industries output since 1973, and retail sales since 1983, supplement county economies and compensate for some declines in commodity production.

- Agency social and economic policy has emphasized the goal of supporting rural communities, specifically promoting stability in those communities deemed dependent on agency timber harvest and processing. An even-flow of timber sales, timber sale bidding methods, timber export restrictions, and small business set-asides for timber sales have been the major policy tools of Forest Service-administered commercial forestlands.

This finding is consistent with past practices in the assessment area. Seventy-two per cent of the assessment area is roadless or wilderness, where timber harvest and grazing are highly constrained or excluded. However, in potential harvest areas dramatic reductions in timber harvest have limited the extent to which the agency is capable of using the tools listed above to support rural communities.

- The factors that appear to help make communities resilient to economic and social change include population size and growth rate, economic diversity, social and cultural attributes, amenity setting, and quality of life. The ability of agencies to improve community resiliency depends on the effectiveness of agency land uses and management strategies to positively influence these factors.

This assessment does not determine the extent to which agencies have the ability to improve community resiliency by effective land use and management strategies. Communities are complex and diverse. Resiliency and adaptability are generated within the communities themselves and how they relate to external influence.

- Predictability in timber sale volume from agency lands has been increasingly difficult to achieve. Advancing knowledge of ecosystem processes, changing societal goals, and changing forest conditions has undermined conventional assumptions underlying the quantity and regularity of timber supply from agency lands.

This finding is consistent with findings of the assessment.

AMERICAN INDIAN RIGHTS AND INTERESTS

- Lands now administered by the Forest Service and Bureau of Land Management were the traditional homelands of affected American Indian Tribes. Land management actions and decisions on these lands affect the rights and interests of these tribes and their members.

This finding is consistent with findings of the assessment. The Nez Perce Tribe has particular interests in salmon recovery, watershed restoration, preservation of important cultural sites, and maintenance of plant materials with cultural importance.

- American Indian tribes in the Columbia River basin depend on lands and resources administered by the Bureau of Land Management and Forest Service for a myriad of needs and uses ranging from subsistence uses and economic purposes to religious and cultural purposes.

This finding is consistent with findings of the assessment, particularly for the streams and low elevation canyons.

WATERSHED AND HYDROLOGY

- Agency social and economic policy has emphasized the goal of supporting rural communities, including tribal communities. The ability of agencies to assist tribal members and tribal communities depends on the effectiveness of agency land uses and management strategies to positively consider and influence these factors (tribal employment, subsistence, treaty and reserved rights, spiritual, cultural and social purposes).

This finding is consistent with findings of the assessment. Cooperative efforts in assessment and improvement projects have emerged as an important vehicle for agency and tribe collaboration.

- There is low confidence and trust that American Indian rights and interests are considered when decisions are proposed and made for actions to be taken on Bureau of Land Management or Forest Service-administered lands.

This finding is consistent with findings of the assessment.

- American Indian values concerning federal lands may be affected by actions upon forestlands and rangelands because of resulting changes in vegetation structure, composition, and density, and existing roads and watershed conditions.

This finding is consistent with findings of the assessment.

- Indian tribes do not feel that they are involved in the decision-making process commensurate with their legal status. They do not feel that government-to-government consultation is taking place.

This finding is consistent with findings of the assessment, but important progress is being made at broader scales in consultation and collaboration efforts.

- Culturally significant species such as anadromous fish and the habitat necessary to support healthy, sustainable, and harvestable populations constitute a major, but not the only, concern. American Indian people have concern for all factors that keep the ecosystem healthy.

This finding is consistent with findings of the assessment, and the salmon provide a major focal point for cooperation toward their recovery.

DATA GAPS

SOCIAL AND ECONOMIC

Methods for more effectively utilizing the ethnographic approach to social assessment should be analyzed and developed to determine what values society places on healthy ecosystems and how society understands issues such as wildfire and wildlife.

The ethnographic approach to social assessment is relatively new in the assessment of land areas. A better understanding of the concept and how it can be useful is needed.

Information about employment in recreation-related businesses and other economic activity is needed. Data for the industrial and agricultural sectors alone will no longer be sufficient to reflect the economic condition of communities as they adapt to change.

WATERSHED AND HYDROLOGY

Stream morphology and reference reach data in the Selway subbasin and much of the Middle Fork Clearwater subbasin is limited or nonexistent. Most stream information used in this assessment was from GIS (geographic information system) data, aerial photographs, or extrapolated from the small amount of data that exists using professional judgment. Stream data is lacking for ERUs in the Selway-Bitterroot Wilderness, the Frank Church-River of No Return

Wilderness, and portions of the Middle Fork Clearwater River and Clear Creek ERUs. The lack of stream information parallels much of the information lacking in fisheries and should be considered together as a high priority inventory need. The focus for information should be where fisheries data is lacking. Refer to the aquatic species subbasin findings and recommendations in this chapter.

Within the context of the larger Clearwater basin restoration plan, there is a lack of coordination and planning for the Selway and Middle Fork Clearwater subbasins. Coordination of restoration efforts within the Clearwater basin and development of an encompassing restoration plan is a high priority. A strong partnership between the Clearwater and Nez Perce National Forests, Nez Perce Tribe, Clearwater Focus Watershed, and the universities is an important link for success. Completion of high priority ecosystem analyses at the watershed scale and this planning unit assessment (PUA) support this effort and will help prioritize restoration.

Transportation plan information is lacking in the lower Selway and Middle Fork Clearwater subbasins to prioritize roads for decommissioning. The first priority for information is the lower Selway, with a moderate priority in the Middle Fork Clearwater area. A partnership with the Clearwater National Forest to develop a road-decommissioning plan for the Middle Fork Clearwater is also a moderate priority. Monitoring information to evaluate how much sediment is generated during road decommissioning and stream crossing rehabilitation is lacking, but research is in progress. Continued partnership with research on the Horse Creek Road obliteration project is a very high priority.

Watershed condition inventories have focused, to date, on the south side of the lower Selway River. High priority areas in which to continue watershed condition inventories are the North Selway Face, Middle Fork Clearwater River, and Clear Creek ERUs. Inventory of stream zones with impacts from roads and timber harvest is a high priority. Soil restoration information about timber harvest units and other impacted soils is a moderate priority.

AQUATIC HABITAT AND SPECIES

Many streams and lakes in the assessment area, in the Selway subbasin in particular, have limited or no data. Comprehensive basin-wide stream surveys have not been conducted on most streams in the Selway-Bitterroot and Frank Church-River of No Return Wilderness Areas. Much of the information contained in this document and presented on maps is based on professional judgment, anecdotal accounts, and subjective observations. ERUs where habitat and fish distribution data are lacking include Otter and Mink Creeks, Marten Creek, Moose Creek, Pettibone and Bear Creeks, Middle Selway Canyon, Upper Selway Canyon, Running and Goat Creeks, and Selway Headwaters. Although portions of these areas may have been surveyed, substantial areas remain unsurveyed, particularly with a comprehensive data collection methodology. In the Middle Fork Clearwater subbasin, substantial unsurveyed areas exist in the Clear Creek and Middle Fork Clearwater River ERUs. Collection of fish distribution data, as a minimum, is recommended as a high priority.

Although the distribution of salmonids throughout the Selway subbasin is roughly known, the genetic integrity of these populations is unknown. Widespread hybridization in westslope cutthroat trout subpopulations from stocking of non-native salmonids is suspected. In addition, isolated redband trout populations may exist. The status of redband trout, and the extent of isolated resident subpopulations, is unknown. Genetic analysis of westslope cutthroat trout from subpopulations potentially affected by hybridization is recommended as a very high priority.

Although redd surveys for spring chinook salmon have occurred over the past 20 years, locations of preferred spawning areas for bull trout, steelhead trout, and westslope cutthroat trout are unknown. Redd and spawner surveys have not been conducted for these species. In particular, mainstem spawning by steelhead trout probably occurs, but has not been documented. Similarly, preferred bull trout spawning areas, with the exception of Wounded Doe Creek, are unknown.

Development of a partnership with the Idaho Department of Fish and Game and/or the Nez Perce Tribe to obtain this data is recommended as a high priority.

In addition, mountain lake surveys have not been conducted at most mountain lakes since 1987. A substantial number of lakes have never been surveyed. These lakes occur in the White Cap Creek and Selway Headwaters ERUs. Impacts from hatchery trout stocking in these lakes, if any, are unknown. Surveys of lakes in these ERUs are recommended as a high priority.

In the stream data that have been collected, survey methodology focused on identification of salmonid fish and their habitat. Information has not been collected about non-salmonid fish and invertebrate distribution, and habitat needs versus availability. Development of a methodology to collect these data, as well as implementation, is recommended as a high or moderate priority.

LANDSCAPE ECOLOGY

Up-to-date, more accurate maps and sample data on existing vegetation are the primary recurring needs for informed management. Within this general need, are particular needs for inventory and assessment of at risk and rare species, plant communities, and structural stages. Species that require additional inventory and assessment include whitebark pine, alpine larch, aspen and other deciduous tree species, foothills grassland species, western white pine, and coastal disjunct species thought to be in decline or at risk because of development in the lower canyon, including Pacific dogwood. Plant communities thought to be at risk include foothills grasslands, due to invasion by exotics. Structural stages thought to have declined include old open dry forest and cedar old growth. More site-specific inventory to better quantify the occurrence and condition of these species, communities, and structural stages is recommended.

The natural dynamics of certain components, particularly snags and down woody debris, need to be better understood, and capable of prediction under different management scenarios.

There is an acute need to develop methods to characterize plant community dynamics at the landscape level under natural, current, and alternative management scenarios. We need the ability to predict fire, drought, and pathogen effects on succession and patterns of landscape change.

FIRE

There is some uncertainty about the degree of departure of fuel conditions, and resultant fire effects on ecosystems. Inventory and assessment of the areas described as highly departed from historic fire regimes are recommended. Inventory and assessment of fuel conditions in the wildland-rural interface are also recommended. Improved ability to predict changes in fire effects, including fire size and intensity, watershed response, smoke production, mortality, weed expansion, altered successional pathways, and fuel dynamics, is recommended to better plan and prioritize areas for wildland fire use, prescribed fire use, or mechanical treatments like thinning or harvest. Inventory of fuel conditions in specific locations, around private inholdings and administrative sites, and near roadless and wilderness boundaries, is needed to better assess risk of fire spread. Inventory of fuel conditions is also needed in communities at risk of unacceptable fire effects: ponderosa pine, whitebark pine and alpine larch, and cedar old growth. Inventory of fuel conditions is also needed in aquatic stronghold areas where the effects of fire suppression appear to be marked: Running Creek, the Little Clearwater River, and Whitecap, Indian, and Deep Creeks.

WILDLIFE

Critical species habitats and habitat linkages need to be identified and monitored over time to address potential threats. These include important migration routes, natal areas, and wintering areas. Priorities should be established by addressing habitats and species most at risk. Specific needs for focal species and habitats are addressed in more detail in Appendix Q.

RECREATION, WILDERNESS, AND TRAILS

Old growth areas outside wilderness need to be evaluated and retention allocations designated on a landscape basis. These allocations should provide for species' needs and reflect the natural forest species diversity across the landscape.

Except for hunted species, little is known about the status and trend of wildlife populations in the subbasins. Many rare and security-sensitive species inhabit the subbasins and there is currently no established mechanism for ascertaining significant changes in populations. Potential threats to populations have been addressed in this analysis, but strategic long term monitoring is needed to evaluate the actual significance of these. Because much of the assessment area represents secure and intact habitat for many rare and vulnerable species, baseline information for these populations is also important for species across their range.

Although large areas of the subbasins are undeveloped, many potential threats exist that warrant further evaluation before management recommendations can be made. These include motorized vehicle use associated with areas and seasons in which species have increased vulnerability. Priorities include alpine areas where wolverines and mountain goats are sensitive to disturbance, high elevation winter habitats where snow machine access may influence lynx security, and important winter ranges that are associated with motorized use.

Information on status and trends of species potentially impacted by non-native species introductions, including amphibians associated with non-indigenous trout in high lakes, is also needed.

Information regarding the historic status of populations and habitats was limited for this assessment. Additional baseline information would contribute to future development of management objectives. A comprehensive inventory of existing data and ongoing investigations should be compiled for the area to add to the collective knowledge base and to avoid duplication of efforts with limited resources.

RECREATION, WILDERNESS, AND TRAILS

Numbers of miles on trail inventories are not currently accurate. Trail conditions and designations (mainline, secondary, and way) of all trails are not known. Trail designations are not always accurately displayed on visitor maps. A current inventory of the trail system is necessary to determine management needs. At this writing, Meaningful Measures/Infra process is underway and is scheduled to be complete in 2001.

Meadow Creek and Moose Creek are eligible for designation as Wild and Scenic streams. A suitability study has been considered, and preliminary discussions begun. Plans to complete that study and determine the status of those streams are necessary.

In designated wilderness, baseline inventories for numbers and conditions of campsites and trails are not complete. Current conditions of some sites are not known because systematic monitoring of sites has not occurred. In order to determine if wilderness areas meet the objectives of limits of acceptable change or standards as determined by forest plans, complete and accurate inventory data should be available.

During forest plan revision, the scenery management system will be implemented and it will replace the visual management system to describe the degree of acceptable alteration to natural landscape based on the importance of aesthetics. Scenic integrity levels are currently displayed and mapped as VQOs (visual quality objectives). A revised map to display the scenic integrity levels of the scenic management system will be needed.

Wilderness opportunity classes (Selway-Bitterroot Wilderness) are not currently displayed in a GIS map. An opportunity class map in GIS will be created for reference to those wilderness areas discussed in this document.

ECOSYSTEM ANALYSIS AT THE WATERSHED SCALE (EAWS) PRIORITIES

Priorities for assessment at the watershed scale are organized by subbasin and according to the established protocol that areas in relatively good condition with high potential will be secured first, and areas requiring substantial restoration investments will be secured second. Areas proposed for watershed assessment do not necessarily conform to ERU boundaries, but may include additional small drainages or face drainages where similar issues are present. Using these assumptions, the team identified the following priorities, which generally tend to confirm earlier recommendations.

The first tier for EAWS for the Selway subbasin:

- O'Hara and Goddard Creeks and the south half of the lower Selway River: assess this area as a secure aquatic stronghold.
- Meadow Creek and upper Running Creek: assess for security as an aquatic stronghold, access planning, restoration of whitebark pine, and wildlife security issues.
- Moose Creek: assess for restoration of aquatic and terrestrial species integrity and wilderness opportunity class.

The first tier for the Middle Fork Clearwater subbasin:

- Clear Creek: assess for restoration of aquatics.

The second tier of areas proposed for assessment addresses primarily terrestrial and social issues. Second tier for EAWS for the Selway subbasin include:

- Upper Selway Canyon, White Cap Creek and Deep Creek: assess for restoration of fire regimes, wildlife security, wilderness opportunity class, and weed control.
- Lower Selway Canyon, North Selway Face, and Gedney Creek: assess aquatic and terrestrial species integrity, wildlife security, and access planning issues.

The second tier for the Middle Fork Clearwater subbasin:

- The Middle Fork Clearwater River: conduct more detailed assessments and site specific restoration recommendations.

PROJECT OPPORTUNITIES

These are recommendations for projects for which there is both some urgency and relative analytical simplicity. They can go directly to development of a proposed action and environmental analysis, and probably will not require a watershed assessment.

- Development of brook trout management plans for Gedney and Three Links Creeks ERU and upper Running Creek.
- Prescribed fire for whitebark pine restoration in upper Running Creek or fire and mechanical treatments around Iron Mountain.
- Weed treatment and bunchgrass restoration in Middle Selway Canyon, Upper Selway Canyon, Deep Creek, and Indian Creek ERUs.
- Wilderness site restoration in Selway Headwaters, Moose Creek, and Gedney and Three Links ERUs.
- Prescribed fire of limited scope around inholdings, administrative facilities, and wilderness boundary zones.
- Road decommissioning in Middle Fork Clearwater ERUs: Bridge Creek, Smith Creek, Tahoe Creek and Swan Creek watersheds.

- Road maintenance and stabilization (priority roads).
- Additions and amendments to fire use plans: O'Hara Research Natural Area and West Meadow Creek.

PARTNERSHIP AND COOPERATIVE OPPORTUNITIES

This section identifies areas of research, inventory, monitoring, and restoration where collaboration can meet objectives of both the Forest Service and other entities. The Selway-Bitterroot and Frank Church-River of No Return Wilderness Areas provide unrivaled natural laboratories for characterizing landscape processes in a setting that is relatively intact and large enough that patterns of landscape variability can be meaningful.

Forest Service and university research programs are a natural focus of such partnerships. Enhancing communication between Forest Service staff and research project leaders is needed to ensure research is well coordinated, considers wilderness values in its execution, and findings are communicated so they result in improved resource management. A potential project is being explored under the leadership of the Rocky Mountain Research Station that would examine landscape scale patterns of distribution of aquatic habitat, disturbance regimes, and effects on fish populations and habitats. Informal working relationships with the Idaho Department of Fish and Game are good, but by collaborating more closely on standardizing methods of survey and data storage, the agency staffs could become more efficient. An agreement with research stations and local universities that defines responsibilities for coordination is recommended.

The growing commitment of the Nez Perce Tribe to aquatic restoration and protection of cultural values suggests opportunities for partnerships in watershed assessment and restoration, including stream and road condition inventories. Washington State University has been a partner with the Nez Perce Tribe in similar projects, and these partnerships offer the chance to acquire and use shared data, standardize survey methods, and involve students in shared inventory and analysis. A macroinvertebrate study tiered to the research study investigating effects of road obliteration in Horse Creek is one such project initiated with tribal involvement. Building on the Horse Creek research project has important benefits because of the wealth of data available from past studies and the instruments in place. There are numerous other resource issues where tribal collaboration would be beneficial to both partners, including wildlife surveys and cultural site protection and interpretation. The Meadow Creek watershed assessment and the district road-decommissioning program might be logical areas of focus for building stronger working relationships with the Nez Perce Tribe.

The social assessment for this document identified some community dissatisfaction with the separation of community members and Forest Service personnel. An approach to help bridge that gap would be to intensify Forest Service participation in school programs and to solicit greater involvement of local people in forest volunteer programs. There are good opportunities in trail and site restoration, weed inventory and control, and cultural site investigation and restoration, where local retirees, teachers, students, tribal members, and other interest groups including the Backcountry Horseman (BCH) and local OHV groups, could be more directly involved in on-the-ground activities, shared experiences, and relationships built around working together.

Outreach programs tend to be erratically supported and suffer when resources are limited, but this assessment finds that building and sustaining these relationships is as critical for good resource management as any other Forest Service activity. Working with outfitters and guides to assist them in providing appropriate information to clients that would enable them to distinguish between grizzly bears and black bears, coyotes and wolves, and brook trout and bull trout needs more emphasis.

Wilderness groups have a deep interest in the Selway-Bitterroot and Frank Church-River of No Return Wildernesses. This assessment attempts to make good use of their insights, and it should

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be used to renew their involvement in wilderness planning and LAC (limits of acceptable change) processes.